RAILROAD GAZETTE

FRIDAY, JAN. 17.

CONTENTS.

ILLUSTRATIONS:	PAGE.
Standard Bridge Guard—Savannah, Florida & Western and Allied Lines	36
Air-Brake Piston Travel Recorder	37
The Trowbridge Boiler Cleaner	37
Bonnefond's Locomotive Valve Gear	38
CONTRIBUTIONS:	
Repairs of Corrugated Fire-Boxes	35
Fires from Car Lamps	35
William J. C. Cilley	35
Compound Locomotives	35
Brake Legislation	35
EDITORIALS:	
Vertical Plane Car Couplers in Service	42
Income Bonds	43
Steam Space in Locomotive Boilers	44
Editorial Notes	42, 44
New Publications	44
Trade Catalogues	44
GENERAL RAILROAD NEWS:	
Meetings and Announcements	45
Personal	46
Elections and Appointments	47
Old and New Roads	48
Traffic	50
MISCELLANEOUS	
Technical	40, 44
Railroad Law	45
The Scrap Heap	41
Hawksbury Bridge Foundations	35
Block Signaling on the Chicago, Milwaukee & St Paul	35
The Hudson Tunnel Blow-Out	36
Report of State Commissioners	37
New England Railroad Club—Notes of European Travel	40
American Iron and Steel Works	40

Contributions.

Repairs of Corrugated Fire-Boxes.

JANUARY 9, 1890.

TO THE EDITOR OF THE RAILROAD GAZETTE:

I suppose that those who are advocating the use of the corrugated fire-box for locomotives, as, for instance, Mr. Webb, of the London & Northwestern, Mr. George S. Strong and some German locomotive men, have carefully considered the question of repairs. If any of your readers are informed regarding the method proposed for repairing cracks and thin places in locomotive fire boxes of this type, I should like to get them to discuss the matter. I am quite aware that in marine service such fire-boxes are very successfully used, but the conditions of service are very different. A.

Fires from Car Lamps.

TO THE EDITOR OF THE RAILROAD GAZETTE:

Can you give me any information regarding fires in wrecks during the summer season? As near as I can remember, I have not seen on record a case where a railroad wreck caught fire during the summer season except from locomotives. Do you know of any instance where a wreck caught fire from a kerosene lamp in the summer time? We are using an oil with 300 degree fire test and 120 degree flash test. We have taken a lighted torch and extinguished it by putting it into an open bucket containing this oil. We have also lighted the ends of pieces of light wood, and allowed the oil to run down over them, and found that the oil puts out the fire. From this I have been led to believe that there is little danger from kerosene oil of 120 degree flash test. **

William H. Cilley.

SANTIAGO, CHILI, Dec. 2, 1889.

TO THE EDITOR OF THE RAILROAD GAZETTE:

The well-merited article on the death of this gentleman, which appeared in your issue of Oct. 18, and is signed C. S. R., contains an error that the writer of the article will, no doubt, gladly see corrected. The error is not surprising, as the statement refers to a matter of 27 years ago.

C. S. R. says that Mr. Cilley was the manager for Mr. Meiggs in the construction of the railroad from Quillota to Santiago, whereas this position was held from first to last altogether by another person, whose zeal, activity, and tact were unceasing. I refer to Mr. Thomas Braniff, of New York, at present Resident Director in the City of Mexico of the Vera Cruz & Mexico Railway, he being also Vice-President of one of the principal Mexican banks and Director of another. MAQUIS BRIDGE.

Compound Locomotives.

ST. MARGARET'S, WEST DULWICH, Jan. 1, 1890.

TO THE EDITOR OF THE RAILROAD GAZETTE:

In your issue of Dec. 20, "N. O." credits me with speaking "of the difficulty of maintaining steam on the Worsdell engines when climbing grades that are really slight." Permit me to explain that I have said nothing of the kind. What I did say ("Railways of England," p. 223) was that I had known one of them fail to make steam freely in a high wind. More recently I have learned that on the Great Eastern Railway, where there are a dozen Worsdell compounds in use, the drivers' report is that they are "shy steamers in rough weather." This, as it seems to me, is only what might naturally have been expected, owing to the lower pressure of steam at the exhaust. But I should have thought it would have been a more serious objection on our small, wind-swept island than on the great continent of America.

As for difficulty in maintaining steam when climbing steep grades, I have never seen it. I was on a Webb compound a few weeks back, and the gauge showed the full pressure of 180 lbs. at the end of the long and steep climb from Carnforth to Shap Summit. Roughly, the gradients are: 3 miles up, 1 in 131; 2 miles slightly down hill; then 14 up an average of 1 in 125; then 6 miles again slightly down hill, finishing up with five miles up 1 in 75. For the last bit a "pilot" is taken. Total distance, 31¼ miles; total rise, 900 feet; time allowed, 39 minutes; average load about 100 to 110 tons (English). From Shap Summit to Carlisle station platform I took the time. It was 28 minutes for 31¼ miles, and this was at the end of a 300 miles run without a stop long enough to allow of raking out the fire. W. M. ACWORTH.

Brake Legislation.

NEW YORK, Jan. 9, 1890.

TO THE EDITOR OF THE RAILROAD GAZETTE:

The necessity of applying an efficient brake to every railroad vehicle has become an admitted axiom; it is no longer disputed that every wheel should be covered by a brake. So well is this understood by the public that there is little fear of any successful opposition to the legislation which you have outlined in the *Railroad Gazette*. There may be some discussion upon technicalities, but the broad fact that railroads will be compelled by law to equip all their engines and freight cars with power brakes and automatic couplers seems to be assured. This being the case, all that we can do is to ask that the law be so framed that it shall do justice to all; that no technicalities shall be insisted upon that will obstruct the railroads in the freedom of their choice of the *best* power brake and coupler. Uniformity need not be insisted upon so long as unison of operation is secured. A standard of excellence will have to be set up, but it should be plain and practical, shorn of all fancy adjuncts which add no real efficiency.

In regard to brakes, the broad term "the best power brake" ought to be sufficient, leaving to railroads the responsibility of the choice; while for couplers it is evident from the condition of the coupler question that equally broad terms will have to be made use of in defining the kind of coupler to be used. So broad a basis as this would of necessity run foul of the narrower one laid down in the *Railroad Gazette*. Brakes are there defined to mean "continuous air brakes." To insist upon any such term as this would be manifestly unjust, and would destroy all future progress.

Your advocacy of the equipment of all locomotives with a brake is to be commended. The locomotive exceeds in weight any other vehicle in the train. It stores up more momentum than any other vehicle, and it is therefore so much more necessary to equip it with an efficient brake; but why insist that it shall be an "air brake?" There would be reason in making it "a steam brake covering every wheel." Suppose it to be an air brake; steam has to operate it. But before it can do so it has to be sent through intricate and delicate machinery to convert it into air pressure, and in this process its power is cut down more than one-half before it reaches the brake cylinder. Is that wise? Is it expedient? Right at hand is the full pressure of the boiler directly at command, requiring no intermediate machinery to multiply the chances of failure. If the brake be a steam brake, greater power and greater certainty are both gained, but the gain that surpasses all others is the alternative a steam brake places in the hands of the engineer, should the train brake fail. That alone would justify legislation upon it, for it contains the potency of life or death in cases of emergency. I would go a step further and say that since it was proved at Burlington that a "squeeze" brake upon an engine was 15 per cent. more powerful than a "spread" or a "pull" brake, no injustice would be done by making it imperative to use a steam squeeze brake upon every wheel of an engine. JAS. HOWARD.

[In other words, make the terms of the law general to admit my train brake, and specific, to require my engine brake. Alas, how selfish we all are!—EDITOR RAILROAD GAZETTE.]

Hawksbury Bridge Foundations.

At the Wednesday evening session of the Annual Meeting of the American Society of Civil Engineers, Mr. Chas. Macdonald gave some account of the foundations of the Hawksbury bridge, illustrated by good stereopticon views. As is now well known, these foundations were sunk to remarkable depths. That of pier six is 160 ft. below high water; pier five was sunk to 146 ft.; pier three to 143 ft. 7 in.; pier two to 153 ft., and pier one to 100 ft. The caissons were sunk entirely by open dredging. They were made of iron plates, prepared in an English shipyard from drawings sent out by the Union Bridge Co. The parts when received went together with great accuracy, and the work left nothing to be desired in this respect.

The ends of the caissons were semi-circular in plan, and they had three circular dredging pockets of 8 ft. diameter. They were 24×52 ft. at the bottom and 20×48 ft. at the top, the decrease in size being all in the lowest 20 ft., the sides being vertical from that up. The iron was put on in 10-ft. sections. Concrete pockets were formed between the outer and inner skins of the caissons all around, and between the dredging wells.

The caisson of pier five was the first one put down. Work on this began Dec. 13, 1886. The caisson, 20 ft. high, was towed out and sunk to the bottom by admitting water between the outer and inner skins. The concrete was kept above high-water mark in this caisson as the sinking progressed, and to this fact Mr. Macdonald attributes much of the difficulty afterwards found in righting it when it got out of line. That is, it became impossible to vary and adjust the weight, and dredging could not be carried down to the cutting edge, as the caisson, being weighted, sank too fast. This caisson was gradually displaced transversely of the bridge 6 ft. 7 in., but 1 ft. 7 in. of this displacement was finally corrected, leaving it 5 ft. out of line. The bucket finally caught in the bottom of the middle pocket, when the greatest depth was nearly reached, and a second and smaller bucket was afterward caught in the chains of the first. A diver went down but could not extricate them, the depth being so great as to prevent his working effectively, and at last the buckets were abandoned and remain a part of the foundation.

The bottom of this caisson was displaced toward the east and the top tilted toward the west. Piles were driven on the east end and a mass of stone dumped in between the piles and the caisson. Thus, as the dredging went on and the caisson sunk, the top was prevented from swinging toward the east, and the foot consequently moved over in the other direction, the centre of rotation of the whole mass being at about two-thirds of its depth. The final displacement of this caisson, 5 ft., made it necessary to place the masonry so as to overhang one end of it. An attempt was made to sink a supplementary caisson on this end. When this had been sunk to about 106 ft. it collapsed from the pressure on the outside. The top was taken off this as well as from the side of the main caisson, a coffer dam was built, the concrete was quarried out, and a masonry brack et was built going down 17 ft. below high water.

Caisson No. 6 also gave much trouble. The bottom of the river sloped sharply, and the caisson was not only displaced but twisted. The result was that the span was lengthened four feet, but the masonry was not skewed, as there was sufficient room on the top of the caisson.

More or less trouble was encountered with the other foundations, but it was found that they could be controlled by the judicious use of the weighting by concrete, so that the dredging could be kept well down to the cutting edges, and by the use of cables made fast to the tops and to the adjacent piers and to a hulk anchored in the stream.

In several instances the sub-contractors put sheathing outside of the foot of the caisson to make the sides vertical, thinking that in this way the tendency to sink out of line would be lessened. Mr. Macdonald does not appear to think that there was much gained by this expedient.

The quickest work was with pier No. 3, which was sunk to 143 ft. 9 in. in nine weeks. Mr. Macdonald promises to prepare a paper describing this work which certainly would be a valuable addition to the literature of the profession.

Block Signaling on the Chicago, Milwaukee & St. Paul.

The Chicago, Milwaukee & St. Paul has recently put a block system in use on 130 miles of its line west of Chicago. There are some slight differences from the system as used on other American roads, but in general it is the same plan that is in use on the Wabash, the Lake Shore & Michigan Southern, the Canadian Pacific and other roads, as will be seen by the extracts from the rules printed below.

The wire used for blocking is divided into circuits of three offices. The sounders are of about 20 ohms resistance, and their sound differs materially from that of instruments ordinarily used. The circuits are so arranged by the use of automatic ground connections that only the instrument at the office concerned in the movement of a train will record the impulse, hence the operators are not required to give the block instrument the close attention usually required. In fact, no sound is heard upon the instrument unless it concerns the operator at that station. Under this method it is possible to utilize the services of agents at all the smaller stations, as the sound of the instrument is sufficiently loud to be heard in any part of the building, or even from the outside platform. An addition to the force of six operators was all that was necessary for the entire line from Chicago to Savanna, 130 miles. The expense of this is about $3,600 per year. The average distance between stations is somewhat less than four miles. No additional side tracks were put in. The total expense of equipping the line between Chicago and Savanna was $900, or $30 per office—a very small sum for an effective single track block system.

The signal used is the double-arm semaphore, and is worked by the operator from his office. The same system has been in operation on some of the C., M. & St. P. lines in Wisconsin during the past 18 months. Practical experience on this road has demonstrated that no delay to trains occurs provided the distance between sidings does not exceed five miles.

EXTRACTS FROM RULES.

Commencing Jan. 1, 1890, trains between Mont Clare and Savanna will be governed in their movements by a

block system, which is designed to protect trains running in the opposite as well as in the same direction. This system will be independent of the general rules governing train movement and the movements directed by special telegraphic orders, and must not be confused with them. The double arm semaphore is used, the right-hand arm governing trains A special wire will be set apart for the exclusive purpose of operating this system. . . A "block" station is any telegraph station where signals are displayed directing train movements. The responsibility of operating this system will be placed upon operators at the block stations, who will be governed by the following rules:

1. They will be provided with train register sheets upon which they will register the leaving time of all trains in both directions at their own stations and at the next station east and west of them. Immediately after a train has entered a block operators will report to the stations to the east and west of them the departure of such train. They will not report a train clear of the block until the rear car of the train carrying the markers has passed their signal at least 300 ft.

2. They will not permit a train to enter a block when a train is reported into the block from the opposite direction, except by order of the train dispatcher. To prevent opposing trains from entering a block simultaneously they will not permit east-bound trains to enter until they have notified the operator at the next block station east to block west-bound trains. They will not permit a train to enter a block following a train in the same direction until the preceding train has been reported as passing the block station ahead, except by order of the train dispatcher.

3. If a train is to turn out at their station to be passed by another train, they will not clear the latter train at the next station back, until the first-named train has cleared the main line.

4. When a "permissive block" is ordered the operator will give each conductor and engineer a card of the following form with the blanks properly filled up:

C., M. & ST. P. R'Y CO.
C. & C. B. (IN ILL.) DIVISION.

....189.

C. & E. No.....
USE PERMISSIVE BLOCK from.....
To.....
Train No..... , entered at... .....M.
....
Operator. Train Dispatcher.

5. When trains are to meet at a block station operafors will block all trains until they are certain that the train or trains that are to turn out have cleared the main line, when they will permit the other train or trains to proceed.

6. The block signal must never be fastened at the "clear" position, but must be held until the rear car of the train has passed.

8. When there are no train orders and the block ahead is clear for an approaching train the signal should be changed to "clear" as soon as the engineer is in sight of it, that the train may enter without reducing speed.

9. When operators at block stations have train orders, they will use the train order signal to indicate the fact to trainmen, and in addition thereto leave the block signal at "danger" until the orders are delivered as per general rules.

10. The following signals must be used: "47" block east-bound trains; "58" block west-bound trains.

When this signal is transmitted, the operator receiving it will respond "I. 13 B. 47," or "B. 58," as the case may be, and sign his initial and office call, and will block such trains until the block is reported clear.

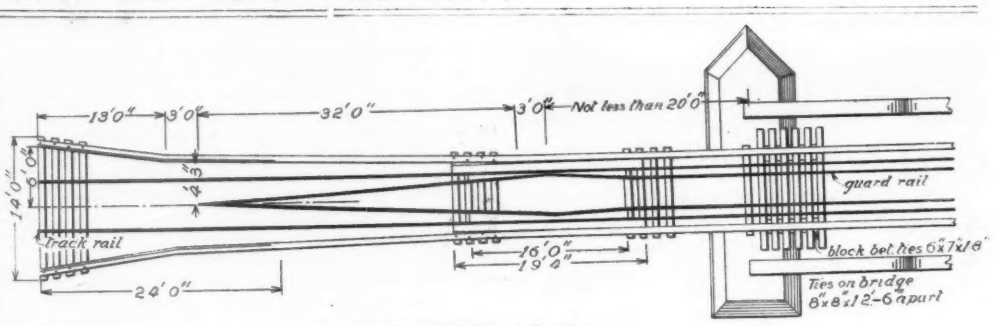
Trains of an inferior class must not occupy the main line in any block when a train of a superior class is due to leave the first station ahead or in the rear.

There is nothing in these rules which relieves trainmen from the fullest observance of all the general and special rules governing the movement of trains.

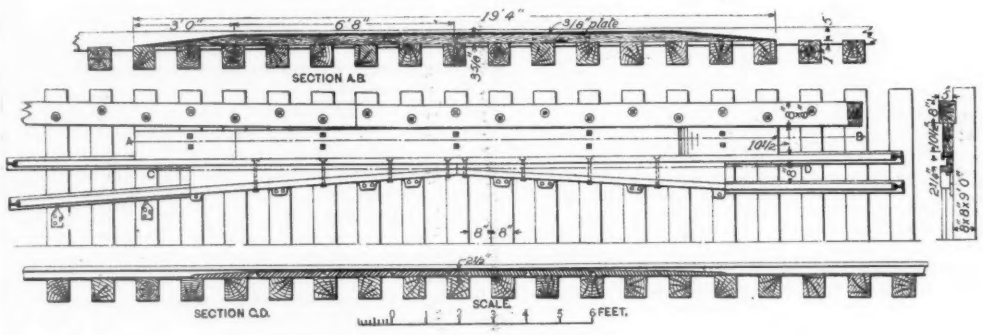
Standard Bridge Guard—Plant System.

The illustrations of the bridge guard used on the lines of the Plant system (Savannah, Florida & Western, Charleston & Savannah and Brunswick & Western), which are given in this issue, require little explanation. Inside guard rails are carried completely across the structure, coming to a point not less than 55 ft. from the truss post, and outside guard timbers are also used. These are shown in the first cut. We have omitted most of the ties in that cut for greater clearness. Of course the flange-way on the rerailer is the same width on both sides and does not vary as indicated by our defective drawing. The bridge ties are 8 in. × 8 in. × 12 ft., spaced 6 in. apart, with blocks between them. The guard timbers are fastened to the ties by lag screws and notched down on the ties. These timbers are protected with iron plates fastened with 3-in. screws every 12 in. the heads countersunk. The plate on top is 2½ in. × ⅝ in., and that on the side 4 in. × ⅜ in.

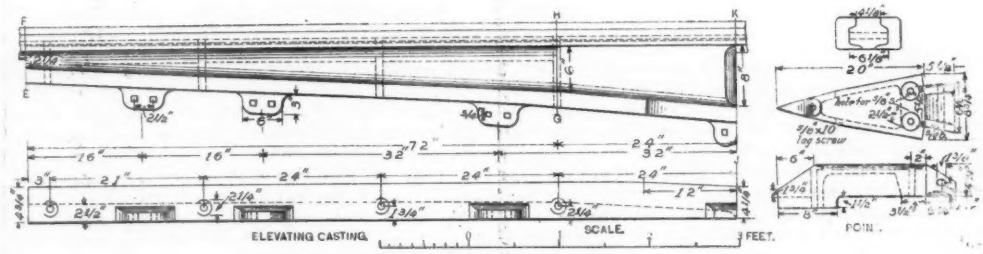
The position of the rerailer varies somewhat with the position of the track joint, but is not less than 20 ft from the truss post. The rerailer is formed of a block on the outside of the track rail, an elevating casting on the inside, and the guard rail. The block is 19 ft. 4 in. long, creosoted and covered with a ⅜-in. wrought-iron plate fastened by 3-in. wood-screws, heads counter sunk. The elevating casting is clearly shown in the plans and several sections, as is also the point used where the guard rails converge.



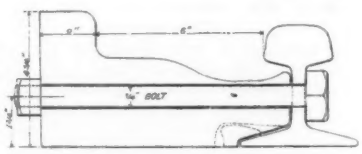
Guard Rail and Rerailer.



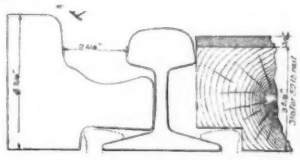
Plan and Sections of Rerailer.



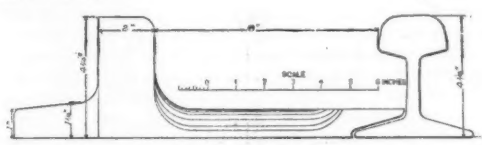
Elevating Casting and Point.



Section on G H.



Section on E F.



Section on J K.

STANDARD BRIDGE GUARD—SAVANNAH, FLORIDA & WESTERN AND ALLIED LINES.
W. B. W. HOWE, JR., CHIEF ENGINEER.

The Hudson Tunnel Blow-Out.

BY S. D. V. BURR.

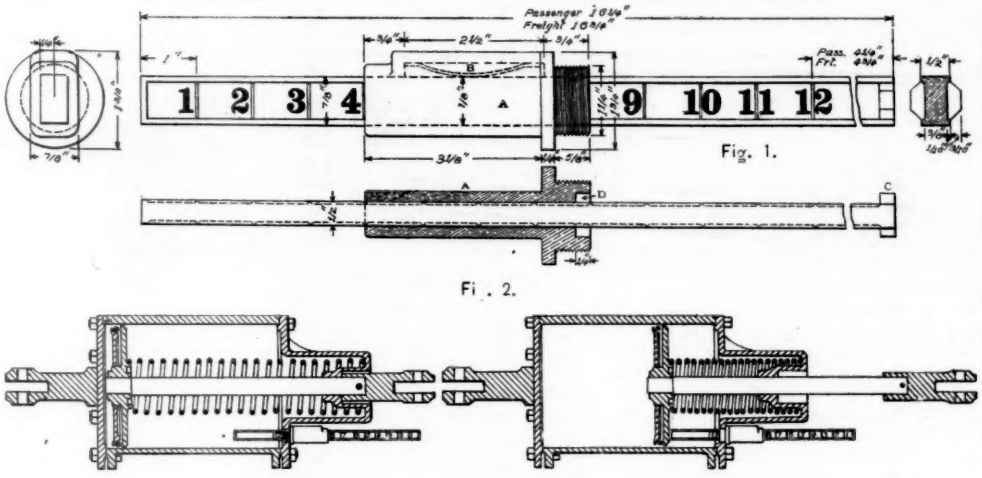
Judging from the accounts in the technical and daily press of the "blow-out" at the Hudson River Tunnel, which occurred just before mignight, on the 4th inst., it is apparent that the true character of the work now being done is not well understood. In the accounts given there are several important features: First, the accident took place instantaneously, and it was by mere chance that the men in the heading escaped; next, and this in a technical journal, there was "a failure of the air pressure to properly support the silt in the side of the tunnel, and several tons of the material fell into the tunnel."

To those who have studied closely the method of building the tunnel and the nature of the material through which it is passing, it is very evident that an instantaneous blow-out, or escape of the confined air, is absolutely impossible. In every instance of a blow-out at the heading the men have been warned in time to reach the air locks. The air pressure maintained in the heading or working chamber balances, as nearly as practicable, the hydrostatic pressure of the water of the river. The silt of the face and sides of the heading serves solely as a wall separating this air upon one side from the water upon the other. As the silt which constitutes the dividing medium is formed of minute particles having but little tendency to pack or cling closely together, it has no power in itself to act as such a dividing medium, except when the two pressures nearly balance each other. An exact condition of equilibrium is not possible, simply because the water pressure is not equal at all points of the excavation, that at the invert being over nine pounds greater than that at the crown, due to the greater depth of the invert below the surface. By maintaining an air pressure equal to the water pressure at the axis of the tunnel, the only work to be performed by the silt partition is to prevent the entrance of water at the bottom, where the water pressure is greatest, and to prevent the escape of air at the top, where the air pressure is in excess, the air pressure, of course, being the same in all parts. It is doubtful if a more perfect substance than silt is provided by nature for this purpose.

In the ordinary operation of digging out the heading the dry state of the silt—indicated by the falling of small lumps—shows that the air pressure is excessive and that it is forcing the water back into the silt; at the same time the too moist condition of the silt—indicated by little streams of water running down the face—shows that the air pressure is not sufficient to prevent the water entering through the silt. This, since the beginning of work upon the tunnel, has given invariably an accurate indication of the condition of the heading and whether the pressure of air should be increased or diminished.

The recent accident was due solely to the blowing out of the air through the silt at the heading. It was in no sense due, initially, to the incoming of the water. This is evident from the fact that, in a case like this, where the air and water pressures are nearly the same, before any entrance of water in large volume can take place, a portion at least of the air must escape, after which the water can flow in. It is further evident that this action of both the air and water must be intermittent, since both pass through the same channel. If an opening was formed at the bottom for the entrance of water at the same time the air was rushing out at the top, the action would be continuous; but this would require such a refinement of detail as almost to place it beyond the range of possibility. At the accident of two weeks ago the first indication of non-equilibrium between the air and water was given by the falling of small pieces of silt. This attracted the attention of the men, all of whom were working at the bottom. Upon examination it was found that the lower part of the face of the heading was coming in slowly but inevitably, while the air was forming a passage through the top. The men then started for the air lock, and had all reached the completed portion of the tunnel when the "whirlwind," as some reporters styled it, occurred. This was caused by a comparatively large volume of air escaping through the disintegrated silt at the top, allowing the expansion of the air remaining. The pressure was reduced to such an extent as to open the door of the air lock into which the men entered.

It is essential to mention that in the tunnel are two air locks built in masonry bulkheads, placed about 400 ft. apart. The air pressure in the tunnel between the locks is from 10 to 15 lbs., that in the heading averaging about 33 lbs. To permit the free opening of the door



AIR BRAKE PISTON TRAVEL RECORDER.

of the inner lock the pressure in the heading must have been reduced to or below that between the locks, or 10 to 15 lbs.

It is now that we come to the most interesting feature of the accident After the air pressure had been reduced to a point certainly below that existing between the locks—and this required some time, as the men all reached the lock—the silt was forced into the heading by the pressure of the water upon its outer side. It entered as a plunger, and forced its way up the tunnel until arrested by the cushion of air still confined, and the pressure of which was increased to correspond with what it was before any escaped. The air and water pressures were again in equilibrium, although perhaps not to such a nice degree as formerly.

Only one man of the twenty odd at work was injured. One leg and one hand were caught and crushed by the air lock door when it was violently closed by the almost instant increase of pressure created by the passage up the tunnel of the silt plunger. Had the door been either closed or wide open no harm could have resulted. But, as the door was ajar, it sustained the full force of the blow of the air. This accident proves, as have all others of a similar character that have happened in the tunnel, that, provided there is a watch kept on the exposed face of the silt, ample time can be given in case of a blow-out for all the men to escape.

Before work can be resumed the disturbed silt will be allowed three or four weeks during which to settle and so compact itself as to again be capable of preventing the passage of air through it. The heading will then be re-opened. The hole formed in the bed of the river by the silt filling the heading has been filled by material dumped from the surface of the river.

Maximum Air Piston Travel Recorder.

Mr. C. A. Schroyer, Car Superintendent of the Chicago & Northwestern, has lately given much attention to the details of brake apparatus for freight and passenger cars. With the assistance of the Westinghouse Company he has reduced the brake leverages and braking power generally to a complete system which has for its basis a proper proportion between the brake beam pressure and the weight of the empty cars. In the shops at West Fortieth street in Chicago he has introduced a method of testing car brakes while the cars are being repaired, which reduces the labor to a minimum. Among other novelties he has devised the air brake piston travel recorder, which is shown here, and which has several advantages.

The object is to enable car inspectors to tell instantly without recourse to a brake application just exactly how far the piston travels in a service stop, and to make adjustments quickly without repeated trial.

Figs. 1 and 3 show the recording scale in detail. Figs. 3 and 4 show it as applied to brake cylinders. The device consists of a long scale, graduated to inches with large figures on both sides, in such a manner that the figures can be readily seen by the air brake inspector. This scale slides through a sleeve *A*, and is held from accidental longitudinal movement by a spring *B*. The sleeve has a thread cut on it at one end, and by this thread is firmly screwed into and attached to the cylinder head, as shown in figs. 3 and 4. One end of the scale has projections cast on it at *C*. These projections enter recesses in the sleeve at *D* when the scale is pushed fully out. The total length of the scale is so regulated that its outer end is flush with the outer end of the sleeve when the piston is at the rear end of the cylinder. In fig. 3 the piston travel is seen to be recorded at eight inches. It has pushed the scale out, as shown. When the piston returns to the back end of the cylinder the scale remains firmly held in position by the spring *B*, as in fig. 4, and thus the maximum piston travel is always recorded, and can be quickly read from the graduated scale.

To facilitate inspection and adjustment of brake shoes the Chicago & Northwestern has decided to apply this device to all cars having air brakes, and to use in connection with it turnbuckles on the brake rods, which will reduce the piston travel one-half inch for each full turn.

The Trowbridge Boiler Cleaner.

In the illustrations herewith is shown a boiler cleaner which is being applied to some locomotives on the Milwaukee, Lake Shore & Western. This boiler cleaner may be classed among those which act as a mechanical separator, not unlike crude petroleum. It permeates between the boiler sheets and the scale, causing separation. Also there forms upon the sheets a film, probably composed of a variety of carbon compounds, which prevents to a large extent the adherence of scale-forming compounds. The feed-water heater is a horizontal drum placed under the boiler through which the feed water passes. The substance placed in this heater to act on the scale is nothing more complicated than ordinary potatoes, the use of which to remove scale and to prevent its formation in boilers is not new.

The manner is which this device is operated is about as follows: Having emptied the cleaner, the hand-hole plate is removed and several pounds of potatoes are placed within the cleaner. After closing the drum steam is admitted, and the potatoes thoroughly softened, after which the feed water is admitted, and the potatoes are driven through into the boiler. In operating this device, instructions are given to blow off the boiler a little every morning, at least enough to lower the water in the gauge glass an inch. The action of this cleaner is slow, but no detrimental effect is seen on the tubes or sheets. This apparatus is made by Messrs. H. T. Sackett & Co., Fond du Lac, Wis.

Reports of State Commissioners.

New York.—The opening pages are occupied with a review of general railroad history during the year. Due prominence is given to the evils of car detention on foreign roads, and the virtual rebates given by allowing the use of freight cars for storage purposes.

Some of the figures of railroad business in New York are as follows:

	Year ending. Sept. 30. 1888.	Sept. 30, 1889.
Gross earnings	$152,122,705	$153,537,208
Operating expenses	101,605,061	101,729,494
Net earnings	50,573,644	51,807,714
Ton mileage	12,731,000,000	12,889,000,000
Earnings per ton mile.....cents	0.797	0.782
Expenses per ton mile	0.527	0.524
Profit	0.270	0.258
Passenger mileage	2,199,000,000	2,302,000,000
Earnings per pass. mile.....cents	2.30	2.29
Expenses per pass. mile	1.57	1.49
Profit	0.73	0.80

Mileage, stock and debt remain almost unchanged. Rates of profit show a nominal increase; rates of dividend an appreciable one. The gain, such as it is, has been on passenger business. The fall in receipts per ton mile has fully offset the slight increase in the volume of freight business. On the other hand, passenger rates have remained substantially unchanged, while passenger business has increased; and this increase has produced a relative economy in operation which shows itself in decidedly increased profits.

The most important question of principles decided is that in the complaint of the Buffalo Merchants' Exchange The Board in its decision recognizes the fact that in many cases the sums of the locals must necessarily be more than the through rates; but in the case of Buffalo, situated as it is at the foot of Lake Erie, at the beginning of the Erie canal, at a point where the service rendered, whether the shipment be through or arrested at Buffalo and sent forward on a new bill of lading, is the same if such shipments are by lake to Buffalo and rail to eastern points, the Board deemed that the ordinary rule should be modified. This is substantially the position taken by the Interstate Commerce Commission in the matter of exportrates. Practically, however, the discriminations complained of are outside of the control of the New York State authorities.

Statistics of accidents are as follows:

From causes beyond their own control.	1889 Killed.	1889 Injr'd.	1888 Killed.	1888 Injr'd.
Passengers	7	76	4	124
Employés	16	77	30	110
Others	0	4	2	6
Total	23	157	36	240
From their own misconduct, incaution or intoxication.				
Passengers	14	55	11	36
Employés	95	500	131	670
Others	372	242	320	259
Total	481	797	462	965
Indeterminate as to want of caution.				
Passengers	1	4	2	1
Employés	80	135	49	154
Others	4	12	4	12
Total	85	151	55	167
General total.				
Passengers	22	135	17	161
Employés	191	712	210	934
Others	376	258	326	277
Grand Total	589	1,105	553	1,372

The seven passengers killed from causes beyond their own control were in rear collisions.

Of the 76 injured from causes beyond their own control, 32 received their injuries in the derailment on the New York Central & Hudson River railroad at Churchville Station, Dec. 23, 1888.

Sixteen employés were killed and 77 injured from causes beyond their own control, as compared with 30 killed and 110 injured in 1888, a very material decrease.

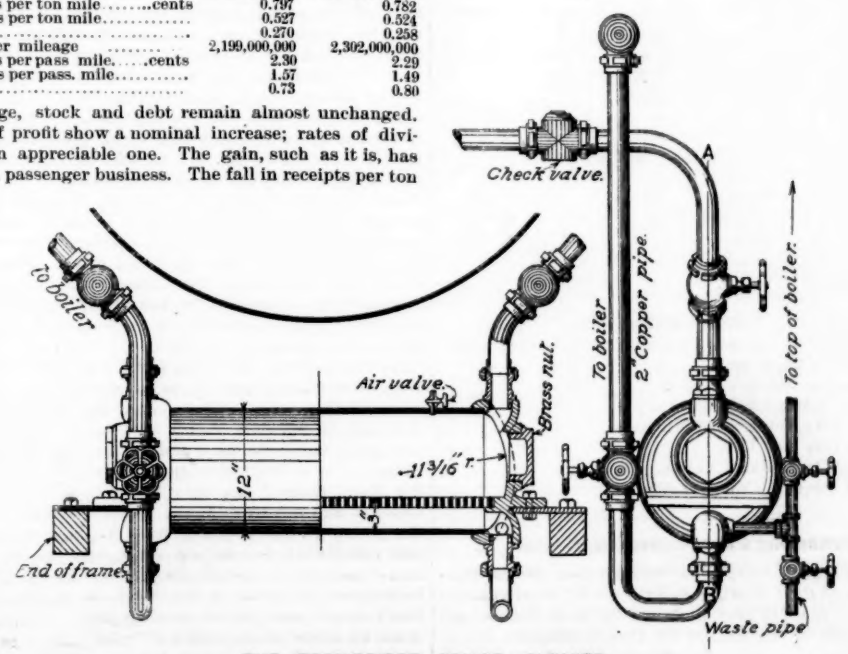
An inspection of the table shows that the causes of death and injury bear the same relation to each other as in previous years.

Seven passengers were killed and 39 injured from getting on or off trains in motion, as compared with 8 and 24 respectively in 1888. It is a singular coincidence that the same number of employés were killed and injured, *i. e.*, 7 and 39 respectively, from the same cause, as compared with 8 and 54 in 1888.

The most serious cause of death to employés was walking or being on track, resulting in 69 killed and 64 injured, as compared with 90 killed and 94 injured in 1888. This is a material decrease.

The next cause of death to employés was falling from trains, engine or cars, resulting in 41 killed and 64 injured, as compared with 32 killed and 90 injured in 1888. In addition to the employés thus killed and injured, there were 13 others killed and 13 injured, as compared with 11 killed and 17 injured in 1888.

The cause leading to the third greatest number of deaths



THE TROWBRIDGE BOILER CLEANER.

and to injuries, nearly equal in number to all the others, was, as heretofore, coupling cars: Deaths 27, injuries 364, against 26 deaths and 480 injuries in 1888. The act requiring equipment with automatic couplers does not prohibit freight cars belonging to foreign corporations from being run within the state, and consequently will not entirely remedy the evil.

Deaths from catching foot in frog show a large increase —12 killed and 9 injured, against 5 killed and 1 injured in 1888. Some of the companies report that the insertion of blocks promotes rather than prevents these accidents by making it harder for a man to extricate his foot.

The most serious cause of death to others than employés or passengers was walking on the tracks, which resulted in 284 deaths and 118 injuries, against 245 deaths and 138 injuries in 1888. At highway crossings there were 45 deaths and 46 injuries, against 27 deaths and 34 injuries in 1888. Sixteen were killed and 16 injured at crossings protected by gates or flagmen; 29 killed and 30 injured at crossings not so protected.

Heating cars by steam from the locomotive is now an accomplished fact. The significant statement is made that the system works "fairly well only."

The following additional legislation is now recommended:

1. Additional powers for enforcing the decision of the commission.
2. An act to prevent crossing at grades.
3. Prohibition of centre-bearing rails for street-car lines.
4. Requirement of approval of stockholders for leases.
5. Prevention of parallel railroad construction.
6. Prohibition of discrimination against shippers by canal.
7. Penalty for failure to file report.
8. Additional responsibility for damages by fire from locomotive engines.
9. Compelling railroads to construct a low railing around the roofs of freight cars.
10. Additional instructions as to temperature in passenger cars.

Kansas.—The report shows the decrease of earnings on Kansas railroads to have been even greater than was generally realized. Omitting, for the sake of better exactitude in comparison, the returns of the Chicago, Kansas & Nebraska, we find:

Passenger earnings 1889 including mail, baggage and express	$21,488,311
Same for 1888	22,376,278
Decrease	887,966
All other companies	$48,196,267
Same for companies reporting preceding year	49,349,366
Decrease 1889 compared with 1888	$1,153,698
Total gross earnings 1889	72,544,597
Same for 1888	74,022,045
Decrease 1889	$1,477,447
Total income from other sources, viz., from bonds, stocks, rentals and miscellaneous sources, for the year ending June 30, 1889	$10,223,127
Total earnings and income	96 052,673
Total expenses and payments exclusive of dividends	95,306.099
Net income	$746,574
Dividends paid	$5,674.531
Excess of expenses and payments over income	4,927,556

Dividends of five and a half million on net income of less than three-quarters of a million involve a great discrepancy. The companies paying dividends the past year are as follows: Atchison, Topeka & Santa Fe, one-half of one per cent.; Chicago, Rock Island & Pacific, five per cent.; Kansas City, Fort Scott & Memphis, two and a half per cent. on common stock and eight per cent. on preferred stock; Missouri Pacific, four per cent.; St. Louis & San Francisco, seven per cent. on first preferred and four and a half per cent. on preferred. The average per cent. on all stock is 1.598. The dividend of the Rock Island was not fully earned; much less that of the Missouri Pacific.

The following roads show an *operating* deficit: that is, earnings less than actual running expenses:

Manhattan, Alma & Burlingame.
Atchison & Nebraska.
Beaver Valley.
Republican Valley, Kansas & Southwestern.
Chicago, Nebraska & Kansas.
Kansas City & Pacific.
Junction City & Ft. Kearney.
Salina & Southwestern.
Solomon Railroad
Probably also:
Kansas Central.
Leavenworth, Topeka & Southwestern.

Besides those already given, the following roads failed to earn fixed charges:

Chicago, Kansas & Western.
Chicago, Kansas & Nebraska.
Kansas City, Clinton & Springfield.
Kansas City Belt Line.
Omaha & Republican Valley.
Central Branch, Union Pacific.

Bonnefond's Locomotive Valve Gear.

We are indebted to *Engineering*, London, for the illustrations and the following description of a peculiar arrangement of valve gear, designed by M. A. Bonnefond, the engineer to the Société de Construction des Batignolles, fitted to a locomotive shown at the Paris Exhibition. Fig. 1 shows its general arrangement, and figs. 2 and 3 are respectively a vertical and a horizontal section through one of the admission valves.

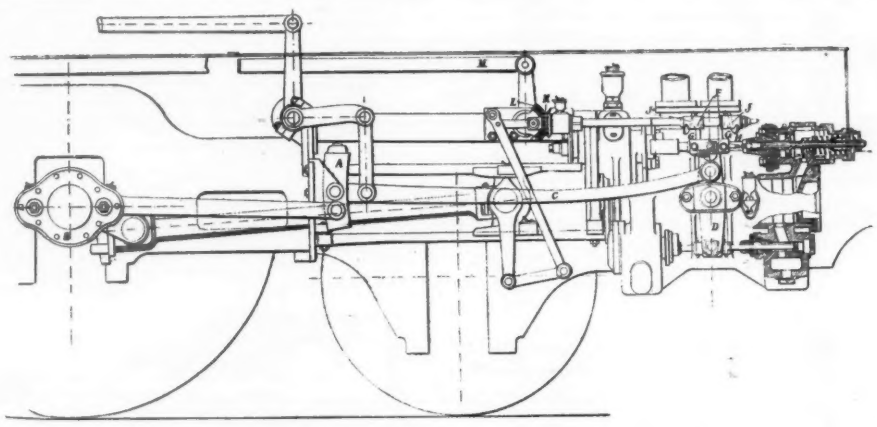


Fig. 1.

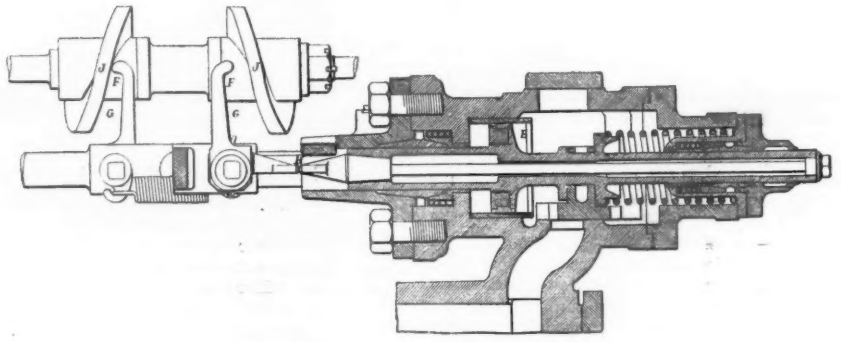


Fig. 2.

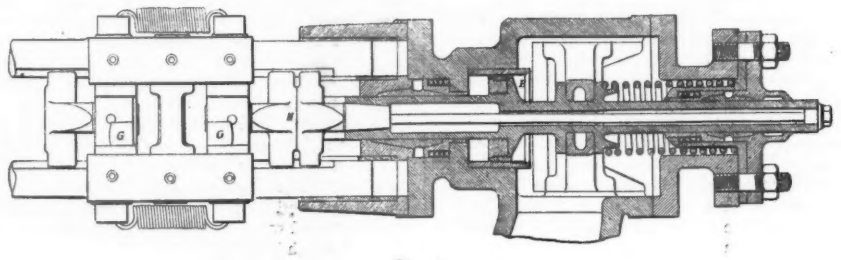


Fig. 3.

BONNEFOND'S LOCOMOTIVE VALVE GEAR.

It will be seen that in this arrangement each cylinder is fitted with two admission and two exhaust valves, the opening of the admission valves and the opening and closing of the exhaust valves being effected by the rocking lever *D*, which is driven by the rod *C* connected to the reversing link *A*, this link in turn deriving its motion from a cam at the end of the crank-pin, this cam acting on a pair of rollers carried by the cam-box *B*. The link *A* is used solely for reversing, the point of cut-off of the steam being controlled by an independent arrangement which we shall now describe.

The admission valves are connected to spindles which pass out through both ends of the valve boxes, the two ends of the spindles being of different diameters, so that the pressure of the steam on the difference of area tends to close the valves. The rocking lever *D*, which we have already mentioned as effecting the opening of the admission valves, gives motion to a reciprocating frame carrying two bell cranks, which by means of a spiral spring are normally held in the position in which they are shown in fig. 2. In this position the horizontal arm of each bell crank is opposed to the end of the corresponding valve spindle, and thus the motion of the bell crank toward the valve chamber causes the valve to be pushed open. This continues until by the motion of the frame the upper end of the vertical arm of the bell crank comes into contact with a spiral cam *J*, formed on a spindle which has a reciprocating motion imparted to it by a lever which is coupled to an arm on the engine crosshead, as shown in fig. 1. As soon as this contact takes place the bell-crank lever is canted over, its horizontal arm ceases to engage the end of the corresponding valve spindle, and the pressure of the steam on the unbalanced area of the latter, assisted by the spring shown in figs. 2 and 3, closes the valve.

Besides its reciprocating motion the spindle carrying the spiral cams *J* can also be rotated by the bevel pinion *K* and quadrant *L*, the spindle sliding through the pinion *K*, but rotating with it. By turning the cam spindle it is determined what parts of the spiral cam *J* shall act on the bell-crank levers *G*, and this also determines the point of the stroke at which the bell-crank levers are tripped and the steam shut off. It is to be noted that as the camshaft by which the tripping is effected has a motion exactly agreeing with the motion of the piston, the cut-off is necessarily equal during the forward and backward strokes, and is quite unaffected by the angularity of the connecting rod.

The action of this arrangement as a cut-off gear is excellent, and applied to a stationary engine it would no doubt give good results; but its complication appears to render it unsuitable for use on a locomotive. It is, however, stated that on the Chemins de Fer de l'Etat an engine fitted with this gear was put into service working local trains on July 29, 1888, and that up to April 23 last this engine had run 25,542 kilometres (15,871 miles) without requiring any repairs, and that during that period the engine had worked with a lower fuel consumption than any other engaged in the same work.

In the case of the engine at the Exhibition, the chief particulars of the gear were as follows:

Lead of admission valves	0.39	in.
Pre-admission in percentages of stroke	1⅛	per cent.
Lead of exhaust	0.78	in.
Pre exhaust in percentage of stroke	8	per cent.
Duration of compression	10	"
" exhaust	95	"

This engine was constructed by the Société Alsacienne at their Belfort works, and was of a type used on the Chemins de Fer de l'Etat for express service. The company possess 128 engines of a very similar type to that exhibited, and which have done excellent service for some years past. In view of the increase in the weight of the trains, however, some modifications were introduced in this original type, the boiler pressure being raised from 128 lbs. to 170 lbs. per sq. in., and the grate area increased, while a pair of small trailing wheels was also added. The first engine of the new type was constructed at the company's works at Saintes, and was put in service at the commencement of the present year.

The chief particulars of the locomotive exhibited are as follows: The engine is of the outside cylinder type, the cylinders being 17.35 in. in diameter by 25.6 in. stroke. The total wheel base of the engine is 19 ft. 2.4 in., there being a pair of leading wheels 4 ft. 3.9 in. in diameter, then two pairs of coupled wheels 6 ft. 7½ in. in diameter, and a pair of trailing wheels 3 ft. 8 in. in diameter. The boiler has 95.6 sq. ft. of fire-box surface, and 1,198 sq. ft. of internal tube surface, making 1293.6 sq. ft. in all. The fire-grate area is 17.66 sq. ft. The weight of the engine is 39.1 tons empty and 43.1 tons in working order, of which latter weight 11.6 tons rest on the leading wheels, 27 tons on the two pairs of coupled wheels, and 4.5 tons only on the trailing wheels.

The Electric Headlight.

On the night of Jan. 7 the writer rode 100 miles behind one of Pyle's electric headlights on the Indianapolis, Decatur & Western. "The half had not been told," or rather the facts told heretofore have not been elaborated to a degree commensurate with the merits and advantages of the light. As new devices are generally described, this invention should receive a column word-picture from the New York *Sun*, Boston *Herald*, or Chicago *Tribune*.

As many of our readers know, this headlight has been in use on two engines of the I., D. & W. for a year or two, and on engines of the Vandalia line for a shorter period. It consists of an arc light of 2,000 candle power, mounted in an ordinary headlight case and with the common reflector. The power is derived from a dynamo placed immediately behind the headlight and about half as large as the latter. The steam to run the dynamo comes from the back end of the boiler in a ¾-in. pipe, and the light can be readily extinguished any minute, and as quickly revived by shutting or opening the valve in this pipe, which is within reach of the engineman's seat.

The arc light is the most powerful illuminator in common use. The locomotive headlight reflector in use everywhere is a powerful concentrator of light. The idea of combining these two elements which go to make up a strong and penetrating light seems to have received much less attention than it should. Others have tried such a light on locomotives, but this experiment on the I., D. & W. seems to have been the only one which has been kept up long enough to overcome all the difficulties that were met with. The use of arc lights was given up on a certain Russian line, after a trial, a few years ago for the alleged reason that the runners' eyes were injured, or, at least, that the men could not keep a good lookout comfortably. But the engineers on the I., D. & W., who have used the lights a year, make no complaint; on the contrary, they express great satisfaction with them.

The only argument for *not* using a powerful headlight on a locomotive must be based either on the additional cost or on the well-known theory that a headlight is not of much value to an engineer anyway. The English, and Europeans generally, use nothing but a signal light, and that, of course, answers its purpose about as well when made of a 6-in. bull's-eye as when placed in front of a 26-in. reflector. The Pennsylvania has adopted this principle — of making the headlight for the benefit of stationmen rather than for the engineer— to the extent of putting upon its engines, all over the system, reflectors of only about one-half the diameter commonly used by other roads. It is a fact that the common headlight, even when new and of the largest size, is of but little use to the engineer in revealing danger. It shows nothing with any distinctness beyond about 300 ft., and 500 ft. is probably the utmost limit at which any one would claim it to be of any effect. These distances are traversed by a train running at 40 miles an hour in 5 sec. and 8½ sec., respectively, and at 60 miles an hour they are covered in about 3½ and 5⅝ sec., respectively. Practically, a runner is fortunate, if, when a man, an animal, a wagon, a land-slide, a car blown from a siding, or any other thing obstructs his way, he has time to shut off steam, put the reverse lever on the centre, apply the brake and decide whether or not to jump off. The fact that emergencies of this sort are met with but rarely is the only justification for running without a better headlight, and, indeed, the only warrant for running trains in the night at all on our roads of thin traffic and long stretches of unguarded track. But the fact that train wreckers, actuated by pure deviltry, and reputable persons with less reprehensible motives, have succeeded in wrecking but a small percentage of our night trains during the past fifty years is no justification for continuing to tempt fate, if there is a reasonable chance to reduce the danger.

The night of Jan. 7 was unfavorable to a good test of the light. The moon was nearly full. The sky was, however, completely overcast by heavy clouds, so that, when the electric light was shut off, the view was very poor, though possibly objects could be seen further away than in a dark night by the aid of a common headlight. Much of the time there was a light snow falling, so that the illuminating power of the lamp could not be expected to be at its maximum, and yet the view for 1,000 or 1,200 ft. ahead was substantially as good as in daylight. That is, a man, a horse, a switch target, or a timber across the track would be readily seen. A red car on a side track was plainly visible at 1,800 ft., and white fences considerably farther. These are the impressions of one unacquainted with the road. An engineer familiar with the surroundings would doubtless make the statements stronger, and it is clear that the accounts of measured distances heretofore published have not been stretched by friends partial to the light. Any person not familiar with the work of engine running at night, and thus made thoughtless, would say at once that the light should be given as soon as practicable to every engineer who wanted it, merely as a personal boon, to ameliorate his natural anxiety.

A fatal train accident occurred last month because an engineer failed to slacken when he saw that a certain switch light was not burning. Reprimands for not making time had probably been so much more frequent than those for failing to report unlit switch lamps, that he thought it best to run the risk. With the electric light he could have seen the target in season to stop, the same as in the daytime. On the I., D. & W. the targets, when right for the main track, stand edgewise, and so show a surface of only about 1¼ in. × 12 in. to the engineer; but this slim object was easily distinguishable at 500 ft. (There were no lamps on the switches.)

Butting collisions now frequently occur on straight track at night, runners being careless about watching for headlights, or failing to get the first view possible on approaching a tangent. A serious one, of passenger trains, happened in the natural gas region of Indiana last month, where the runners each saw the other's headlight, but took it for a light from one of the flaring gas torches which thickly abound there. But these engineers never could have made that blunder with the electric light, for it would command attention a mile away, and would be noticeable at five times that distance. The night the writer was at Tuscola, Ill. (after the snow had ceased falling), the light on the horizon appeared prominently when the approaching train was yet eight or ten miles away. An intervening summit prevented a direct view of it until within about a mile, but at that distance it was much brighter than the strongest street arc light when within 30 ft. of the observer. If the ordinary intensely bright spot of an arc light, which is about 1 in. or 2 in. apparent diameter, be imagined of 18 to 24 in.—multiply its effect, say, from 80 to 300 times—the reader may get a very fair notion of the headlight. A deaf person, or one-half drunk, and the numerous careless wayfarers who are neither deaf nor drunk, would certainly have their wits sharpened if they were to dispute the right to the road with an engine carrying one of these lights; and if the light should come into general use, many a tramp would doubtless live considerably longer to burden the community.

The objection to this light lies in its brightness. An engineer running toward it would find it hard in many cases to distinguish his landmarks. But ordinary lights are quite objectionable in this way, and, as every one knows, a switch light or even a red danger signal is often entirely invisible to a runner if he meets another engine just before he comes in line with the signal. It is, therefore, not easy to compare the old and new lights in this respect without an actual trial. No light will project its rays around a curve; but with the ordinary reflector the arc light illuminates a considerable width each side of the track, and probably the case could be made so as to be readily revolved to change the direction of the rays. The field for this light is therefore more especially on single track roads with a large proportion of straight line; but in view of the facility with which it can be extinguished and reignited it is by no means certain that it will not be a profitable thing for double track roads also.

These lights are made by the National Electric Headlight Co., of Indianapolis, Ind., of which the officers are: R. B. F. Peirce, President and General Manager; L. A. Boyd, Secretary, and George C. Pyle, the inventor, Electrician. The lights lately put in use embody some improvements not found in those of earlier make, but one of those put upon one of the I., D. & W. engines over a year ago is still giving excellent service and will probably be kept running until it fails, for the purpose of testing the durability of the apparatus in all parts. The company is now having 100 machines made. Some further particulars were given in the *Railroad Gazette* of Nov. 29, p. 781.

Annual Meeting—American Society of Civil Engineers.

The 37th Annual Meeting of the American Society of Civil Engineers was held in its house, beginning Wednesday, Jan. 15, President Max. J. Becker in the chair. The morning session was principally given to reports of officers and of committees.

On Jan. 1, 1889, the total membership of the society was 1,243. On Jan. 1, 1890, the membership was as follows:

Honorary members, resident	5
Honorary members, non-resident	3
Corresponding members	3
Members, resident	180
Members, non-resident	830
Associates, resident	16
Associates, non-resident	39
Juniors, resident	30
Juniors, non-resident	130
Total	1,245
Fellows (5 being members)	56
Subscribers to building fund 140, of whom 85 are entered in one or other of the above classes, and 16 deceased, leaving	39
Total connected with the society Jan. 1, 1890	1,335

The additions during the past year to the several classes of the society membership have been:

Members qualified	84
Associates qualified	11
Juniors qualified	32
Fellows qualified	1
Total additions	128

The decrease during the year was 36, as follows: Deaths, 21; resignations, 9; transferred, 6. The net addition during the year was 92.

The treasurer's annual report showed the receipts for the year to be $39,799.91, including balance on hand on Jan. 1, 1889, of $6,515.02. The expenditures for the year were $28,875.46, the balance on hand on Jan. 1, 1889, being $10,924.45.

The Norman medal was awarded to Mr. Theodore Cooper for his paper on American Railroad Bridges. The Rowland prize was awarded to Mr. James D. Schuyler for his paper on the Construction of the Sweetwater Dam.

The Committee on Methods of Testing Structural Material, appointed in conformity with the action of the society by letter ballot, was announced as follows: G. Bouscaren, W. H. Burr, R. W. Hunt, J. G. Dagron, Percival Roberts, H. G. Morse, H. B. Seaman.

The committee to report upon standard rail sections, also authorized by action of the society by letter ballot, was announced as follows: H. Stanley Goodwin, A. M. Wellington, Samuel Rea, Thomas Rodd, Geo. S. Morison, S. M. Felton, Jr., D. J. Whittemore, J. D. Hawks, R. W. Hunt, J. Foster Crowell, F. M. Wilder, E. D. T. Myers, G. Bouscaren.

Mr. Whittemore announced that, when the proper time came, he should introduce a resolution to annul the action of the society in appointing this committee. He desired, as all railroad engineers do, uniform rail sections, but he was opposed to the society taking upon itself to establish such sections. Such a precedent could be followed to almost any extent. Those peculiarly interested, the railroads and the rolling mills, were the proper ones to make such standards, through the action of the engineers employed by them.

The Committee on the Failure of the South Fork Dam stated that its report on that disaster is prepared and is now in the hands of Mr. J. B. Francis, the chairman. The committee recommends, however, that its conclusions be not made public at present, but that the report be left, sealed, in the hands of the chairman, subject to the call of the Society. Their reason for this action is that suits for very heavy damages are pending in the courts of Pennsylvania, and that the committee does not think it proper to express any opinions which would influence decision in those suits. The report of the committee was accepted.

Mr. Fleming, Chairman, reported for the Committee on Uniform Standard Time. The committee had received responses to its circular letter addressed to railroad officers, showing that officers representing about 135,000 miles of railroad were in favor of the system. The committee submitted a form of a memorial to Congress asking for a ratification of the action of the International Congress of 1884, and for such national laws as are necessary to legalize the twenty-four hour system of standard time. The report of the committee was accepted, the memorial to be submitted to letter ballot.

The Committee on Impurities in Domestic Water Supply reported. In the opinion of this committee the organization to inquire into the sources of impurities in drinking-water, and the methods of remedying them, should be a national one, and the work should properly be taken up by the American Society. The committee recommended that all printed information on this subject should gradually be collected and catalogued, and suggested the employment by the society of an expert to assist the special committee in the preparation of this catalogue and in correspondence. In the opinion of the committee the society should own and maintain a complete collection of such literature, and estimate the cost of a working library at about $4,300, and of a complete library at about $7,000. It is suggested further that the same person might be employed by the society to investigate special cases. The report was accepted, and referred to the Board of Direction.

The Committee on Revision of Constitution and By-Laws reported as follows:

Your committee at its first meeting became convinced that the time at its disposal and the magnitude of the various questions involved, would not permit a final report of an amended constitution to be made in time for submission of it at the annual meeting of January, 1890, and at its meeting held Oct. 17, 1889, decided that in order to facilitate the preparation of an amended constitution, and to the end that the voting thereon could be intelligently done, there should be adopted a codification of the present constitution and by-laws, which is submitted herewith for discussion at the annual meeting, and for submission to vote of the society. This codification contains only verbal amendments to the present constitution, in which provisions relating to the same subject are scattered miscellaneously, some of them being in the constitution and some in the by-laws.

The committee submits an amendment to the amending clause of the present constitution which simply provides that amendments may be considered, discussed and amended at the business meeting of the annual convention, and voted upon thereafter in the same manner, and in addition to their being considered, discussed and amended at the annual meeting and voted upon thereafter as is now provided.

The committee in submitting this report of progress, respectfully suggests that it be continued until the business meeting of the next annual convention, in order that it may have time to fully consider and digest the important suggestions made, and the information obtained bearing upon the subject committed to it.

WM. P. SHINN,
CHAS. B. BRUSH,
F. COLLINGWOOD,
MENDES COHEN,
O. E. MICHAELIS,
CHARLES L. STROBEL,
S. WHINERY.
} Committee.

Professor Egleston moved the appointment o a Committee on Units of Measurement. This matter will be submitted to letter ballot.

Considerable discussion took place on the reconsideration of the action of the society in the appointment of a

committee on standard rail sections. Mr. Brush moved a reconsideration of the action, and it was resolved to submit to the society for latter ballot a resolution discharging the committee.

The ballots for officers for the ensuing year were canvassed with the following result:

President, William P. Shinn; Vice-Presidents, A. Fteley, Mendes Cohen; Secretary and Librarian, John Bogart; Treasurer, George S. Greene, Jr.; Directors, Charles B. Brush, Theodore Voorhees, Robert Van Buren, William Ludlow, William G. Curtis.

Ballots for membership were also canvassed and the following were declared elected:

Members—Robert Linah Cobb, Chief Engineer Construction Louisville & Nashville R. R., Louisville, Ky.; Benj. Douglas, Engineer of Bridges Michigan Central Ry., Detroit, Mich.; George McGrew Farley, Superintendent Western Div. N. Y. & N. E R. R., Boston, Mass.; Anthony Erneste Bernhard Feind, Drainage and Water Supply Commission, of Chicago, Ill.; Louis Frederick Fieser, Engineer Maintenance of Way Cleveland, Cincinnati, Chicago & St. Louis Ry., Indianapolis, Ind.; James Kennon Geddes, Chief Engineer and Roadmaster to the Receiver B., Z. & C. Ry., Zanesville, O.; William Tillottson Gould, Assistant Engineer St. Louis Div. Mobile & Ohio R. R., St. Louis, Mo.; Henry Randolph Holbrook, Chief Engineer Pueblo & State Line R. R. Pueblo, Col.; Lingan Strother Randolph, Master of Machinery Cumberland & Pennsylvania R. R., Mt. Savage, Md.; Merritt Harrison Rogers, Division Engineer Denver & Rio Grande R. R., Pueblo, Col.; Robert Delos Rowe, Assistant Engineer in charge of Bridges, Buildings and Water Service, New Mexico Division A., T. & S. F. R. R., East Las Vegas, N. M.; John Herbert Wallace, Assistant Superintendent Track, Southern Pacific Co., Pacific System, San Francisco, Cal.; Henry Fisher White, Chief Engineer Cedar Rapids & Northern Ry., Cedar Rapids, Ia.; Herbert Michael Wilson, Engineer Irrigation Section U. S. Geological Survey in charge of Montana Division, Washington, D. C.

Juniors—Morton Lewis Byers, Assistant Engineer Maintenance of Way Dept. Erie and Ashtabula Division, Pennsylvania Lines West of Pittsburgh, New Castle, Pa.; John Francis Healy, Resident Engineer Cincinnati, Alabama & Atlantic Ry., Fayetteville, Tenn.; Rudolph Philip Miller, Assistant Engineer Richmond & Danville R. R., Richmond, Va.

Thursday was given to excursions to Willetts Point and the Navy Yard, and Thursday evening the Engineers' Club gave the society a reception at the Club's house.

New England Railroad Club—Notes of European Travel.

At the regular meeting Jan. 8 the above subject was treated by various members and others. The Secretary read the first paper by

MR. ANDREW J. PITKIN, Superintendent of the Schenectady Locomotive Works: My short stay abroad was filled with matters of interest, as you can well imagine, it being my first trip. As your president stated in our conversation at Niagara Falls, we are very bright in America, but we don't know it all. I was very agreeably surprised in the comfort of travel in Great Britain after the discomfort of an all day's journey on the Continent. The new coaches, at least the first-class compartments, have such conveniences as will enable the traveler to reach his journey's end with a degree of comfort not attainable on the Continent. The roadbed is in excellent condition, the rails being much heavier in proportion to the weight of the rolling stock than in this country. Metallic ties, with cast iron chairs for holding the rails, are used largely, and altogether, we have much to learn in this respect from our cousins in Great Britain. The passenger service has some marked superiority as a commercial enterprise in the fact that the dead load of car per passenger is about ¼ or ⅛, I should judge, of what we have here.

The compartments have certain advantages not attainable in our cars. The doors at the sides afford a means of ingress and egress that allows the passengers more freedom than we attain. I noticed that, as I stepped from the door to the platform and walked toward the forward end of the train, before I had reached half the distance the passengers leaving the cars were all out and the newcomers seated in their places. In a number of instances I timed the stops at the stations, and found they were from 30 seconds to one minute, except, of course, at large cities. Thus, even their local trains make very good time over the road. I spoke of the gentlemanly porter. Every man in the railroad employ is gentlemanly, not only in Great Britain, but on the Continent. In the two weeks of almost uninterrupted travel by rail, we met with nothing but politeness and kind treatment from the red-capped government officials in charge of the stations in Germany to the guard who politely opens the door and calls out the name of the stations. In this respect "Free America" has much to learn.

The locomotives used abroad have been so fully illustrated that Americans generally have a very good idea of their design. The principal departure from the usual standards is the compounding, which seems to meet with considerable favor. Some of the proportions of these engines, however, would hardly meet with approval here; for instance, one of the new designs is a 20 and 28 × 24 compound, having a single pair of driving wheels 7½ ft. in diameter, the weight on drivers being but 40,000 lbs. We would naturally think this engine overcylindered and would expect it to lose about as much in slipping as would be gained by the compounding. The engine with twelve of the light English cars did slip badly in starting and the speed decreased to a marked degree on ascending grades. Still, such economy is shown in the compounding of the various types that this particular road is building nothing but compounds for road traffic. Another road is building passenger engines, *only*, compound. With our modern designs of locomotives, having large boiler and consequently more weight on drivers for a given cylinder power, there seems no reason why the principle of compounding should not be successfully introduced. The criticism we so frequently hear, that the compounds are slow in starting trains, seemed to have foundation in the fact that they slipped badly from lack of sufficient adhesion, and consequently cannot exert their full cylinder power.

The workmanship on locomotives is laborously perfect, much time being spent in finishing and polishing parts that for ordinary service were better painted. Many of the designs seem to have been made with little idea of cost of construction, and, as is well known, the working parts are very inconvenient to get at for any little repair necessary to be made on the road. This, however, is the exception rather than the rule, as the locomotives generally are well designed for the service, and perform the work with marked success.

In looking through the various shops one is impressed with the superiority of our modern design of machine tools. In very few instances do you find tools that compare at all favorably with those now made by our best builders. This is due largely, no doubt, to our depending so entirely on tools in reducing the cost of production rather than by decreasing the amount of wages paid the workmen.

MR. JOHN COGHLAN, Master Car Builder, B., R. B. & L.: After landing we went to examine the first, second and third-class cars. The two latter classes had just light enough admitted to make the darkness visible, and while the second-class cars were fairly well upholstered, the third-class cars had merely a piece of carpet tacked on the seats, which were the soft side of a pine board. We also examined the two grades of first-class cars. We found no closet accommodations. The Midland Railway has probably more improved systems of construction. They are adopting as nearly as possible the American systems, which indicates that whatever prejudices the nobility may have as to exclusiveness, the prevailing opinion is that our system should be generally adopted. We then took a Belfast and Liverpool steamship of about five hundred tons, built on the same lines and by the same builder as the "Teutonic." The speed that night on a chop sea was 21½ knots an hour while I was on deck, an astonishing speed for a small vessel. Reaching Belfast, 125 miles distant, the next morning at eight o'clock, having started at eleven o'clock, we went with a letter of introduction to Messrs. Carrollton & Wolfe, a large shipbuilding concern, where we were courteously allowed the privilege of examining the works. There were six sister ships to the "Teutonic" on the stocks in process of construction, one of them, which will be completed about June 1st, having a capacity of 3,000 more horse power than the "Teutonic," and is expected to show a speed of 22½ knots an hour.

Returning to England, determined to get an experience of the different styles of railroad travel, we first traveled first-class on the Northwestern Railway, and found that one shilling would ensure the utmost courtesy from the employes of the road, while when that could not be obtained they were as discourteous as possible, and I can say that for fair and square and courteous dealing by railroad employés the trainmen in the United States are unsurpassed.

On our train from Fleetwell to Preston there were twelve cars of the first, second and third class. At Preston there is about fifteen minutes' stop, and there they took on ten more coaches. The next stopping place was Crewe, where they took on ten more cars, making a train of thirty-two cars, which the engine seemed to draw without any great hardship. I did not see that the passengers got out of the coaches any more rapidly than they would from the cars of the Boston & Albany or Old Colony railroads

Our box cars would ride a hundred per cent. better than the third-class French cars did, judging from our experience, and they were very poorly lighted. The first-class cars are somewhat better.

The PRESIDENT: We have with us to-night Mr. Firth, who has spent several years in Russia and Germany, and who kindly consents to give us the benefit of some of his thoughts.

Mr. FIRTH: I think nearly everything has been said that I could say. I have just come from San Francisco to this city, and I am bound to repeat what I have heard here to-night, that you excel Europeans in comfort in railroad travel, even including Russia; but I would like to make an exception in favor of Russia, in that they are fortunate because, in the early days, they had American engineers to build their principal railroad, who installed a system which is practically American, and they still adhere more or less to your admirable construction of railroad carriages.

In Russia we have your American Baldwin locomotive and the Grant locomotives. We have stuck to the direct action between the eccentric and the valve with, so far as my experience has gone, great advantage in the mechanical working of the locomotive itself. Russia began to build for itself extensively about 10 or 12 years ago, and I think their engines have a larger heating surface than you gentlemen use. Russia to-day has good schools, and is educating its young men in all that belongs to technology, and among other subjects they have got hold of the construction of railroads and the construction of railroad rolling stock. In short, in my opinion nowhere in Europe but in Russia, and in America, can be found the nearest approach to absolute comfort in railroad travel.

American Iron and Steel Works.

We give below some extracts from the preface to the tenth edition of the "Directory" of the American Iron and Steel Association, which was briefly noticed last week:

The great activity in the American iron trade during the last two years has been chiefly noticeable in the erection of blast furnaces in the Southern states, and in the erection of steel works in the Northern states. There has also been observable in these two years a marked tendency to increase the capacity of individual establishments. . . . In the present edition of the Directory we enumerate 575 blast furnaces as being either active in November last or as likely to be some day active, as compared with 582 furnaces which were enumerated in like manner in November, 1887. . . . All the charcoal furnaces in West Virginia and several in Pennsylvania, Maryland, Virginia, Wisconsin and other states are among the number which have been transferred to the abandoned list. The whole number of charcoal furnaces has been reduced from 168 to 146. A net decrease of 10 in the number of anthracite furnaces, which includes those which use mixed anthracite and coke, has taken place; while there has been a net increase of 25 in the number of furnaces which use bituminous coal and coke. . . . The greatest activity in the building of new furnaces during the two years ending November last has been in Alabama. Two years ago there were 24 completed furnaces in Alabama and 19 furnaces were building; in November last there were 44 completed furnaces in that state and eight were building. Tennessee has not shared conspicuously in the activity in the building of new furnaces which has given such a boom to Alabama during the past two years. In November, 1887, Tennessee had 17 completed furnaces and three building, while in November, 1889, it had 19 completed furnaces and none building.

The annual capacity of the 582 completed furnaces in November, 1887, was 10,990,993 net tons; the capacity of the 575 completed furnaces in November, 1889, was 13,168,233 net tons, an increase of 2,177,240 net tons, or 1,943,964 gross tons, in two years. . . . In the last Directory there were enumerated 433 completed rolling mills and steel works in the United States in November, 1887, with 12 building. In the present edition we enumerate 445 in November, 1889, with 11 building. During the intervening two years 39 rolling mills and steel works have been built and 27 have been abandoned, leaving a net increase of 12. Of the 39 new enterprises completed in the last two years many of them embraced works for the manufacture of steel by either the Bessemer or the open-hearth process. . . . The annual capacity of the rolling mills in finished iron and steel has shown a large increase since the publication of our last Directory. In November, 1887, their annual capacity was estimated at 8,265,000 net tons, and in November, 1889, at 9,215,000 tons. . . . The annual ingot capacity of the completed and building standard Bessemer steel works in November, 1887, was 4,750,000 net tons, and in November, 1889, it was 5,600,000 tons, Clapp-Griffiths and Robert-Bessemer plants both being excluded. The Clapp-Griffiths steel industry in this country has made no progress in the last two years; indeed, it has slightly retrograded. . . . In November, 1889, seven completed Robert-Bessemer plants had been built in this country, and one plant was in course of erection. The completed plants contain 11 converters, and there were three converters in course of erection. All the converters operated by this new method are of small capacity.

The open-hearth steel industry continues to show the same progress that has been noted in previous editions of the Directory. In November, 1887, there were 50 completed open-hearth steel plants in the United States and three plants were building. In November, 1889, there were 56 completed plants and five plants were building. In November, 1887, there were 94 completed open-hearth furnaces and 10 furnaces were building. In November, 1889, the number of completed open-hearth furnaces had increased to 116, and 23 furnaces were building.

The number of rolling mills and steel works enumerated in the present edition of the Directory which use natural gas wholly or in part as fuel is 104, against 96 in November, 1887, 68 in August, 1886, and six in September, 1884. Although the number of establishments which use natural gas has increased since the appearance of our last Directory, it will be observed that the increase has been very slight. It may also be added that during the past year there has been much interruption to the use of natural gas at many iron and steel establishments, caused by an inadequate supply, and that some manufacturers are now contemplating to return to the use of coal entirely. . . . The use of petroleum especially has been greatly increased at iron and steel works during the past two years, and various systems for its use have deen introduced. This edition of the Directory describes 21 rolling mills and steel works which were using petroleum in November last, either wholly or in part, as fuel, and there may be a few others which are now using petroleum.

TECHNICAL.

Locomotive Building.

The Rio Grande Western received five more freight engines from the Baldwin Locomotive Works last week, being the last of the 25 ordered. There are still four of the passenger engines ordered of the New York Locomotive Works yet to be delivered.

The Savannah, Americus & Montgomery has ordered five engines in addition to the eight ordered of the Baldwin Locomotive Works last fall.

The Georgia Pacific has recently received two passenger engines and 10 mogul freight locomotives from the Rogers Locomotive Works, Paterson, N. J.

The Brooks Locomotive Works will soon commence building 10 heavy passenger locomotives for the Wisconsin Central.

The Maine Central is having four locomotives, weighing 55 tons, constructed by the Portland Co., of Portland, Me.

The St. Louis, Vandalia & Terre Haute has placed a contract for five heavy locomotives with the Pittsburgh Locomotive Works, to be delivered in February.

The Baldwin Locomotive Works have an order for a locomotive for the Kennebic Central.

The Dickson Manufacturing Co., of Scranton, Pa., has just received an order from the Ontario, Carbondale & Scranton for 25 locomotives. This and other orders the company has will keep the works busy until July 1.

The Concord & Montreal has placed an order with the Manchester Locomotive Works for two 10-wheel passenger engines.

Car Notes.

The Barney & Smith Mfg. Co. is building 400 hopper gondola cars for the New York, Pennsylvania & Ohio.

The Missouri Pacific has recently received 200 40-ft. carriage cars, which are now in service.

The number of cars built for the Iron Car Co. during the year 1889 was 1,650. This includes those built by the Huntingdon Mfg. Co. The total number of tube iron cars now running, and those under construction for delivery during the next three months, is 7,840. The company expects to build 5,000 cars during the present year.

The Cincinnati, Wabash & Michigan has ordered two parlor chair cars, which will be put in service on day trains next month.

The Central of Georgia has just received six new combination mail and baggage cars for the Savannah & Western division. The 20 new passenger cars being constructed by the Ohio Falls Car Co., at Jeffersonville, Ind., will be delivered in a few weeks.

The Rio Grande Western received 15 freight cars, four standard gauge mail and six second class coaches last week. With the exception of 37 freight cars not yet delivered, this completes the order for the new standard gauge cars. The Wells & French Co., of Chicago, and the Litchfield Car & Machine Co., of Litchfield, Ill., built the freight cars and the St. Charles Car Co., of St. Charles, Mo., built the passenger cars.

The Jackson & Woodin Manufacturing Co., of Berwick, Pa., is working on an order for 500 cars for the Lehigh Valley and several other smaller orders.

The Gilbert Car Co., of Troy, N. Y., has just shipped a number of cars for the Cordova Central in the Argentine

Republic. New machinery is being put in the works at Green Island, near Troy.

The Lehigh Valley Car Co., at Stemton, Pa., has orders on hand for cars for the Pennsylvania, Poughkeepsie & Boston; Charleston, Sumter & Northern; Central of New Jersey; Lehigh Valley, and for some South American roads.

The Elliot Car Works, at Gadsden, Ala., have delivered 25 of the 100 coal cars they are building for the Alabama Great Southern.

The Billmeyer & Small Co., of York, Pa., is constructing passenger cars for the Norfolk & Western, Atlantic & Danville and other roads, as well as a number of freight cars.

The Kansas City Car & Wheel Works have completed an order of 100 refrigerator cars for the Pabst Brewing Co., of Milwaukee, Wis.

The Pullman Car Co. has an order for 25 passenger cars for the Central of New Jersey.

Bridge Notes.

The Commissioner of Public Works of New York City is preparing plans and specifications for the proposed viaduct from One Hundred and Fifty-fifth street and St. Nicholas avenue to Seventh avenue at Macomb's Dam Bridge. The estimated cost is $503,402. The viaduct will be 1,500 ft. long and 60 ft. wide.

The Chamberlain Investment Co. will probably construct an iron bridge, 120 ft. long and 34 ft. wide, at Fort Worth, Tex.

The Grand Rapids Toll Bridge Co. has been incorporated by B. G. Chandos, G. J. Jackson and others to build a bridge at Grand Rapids, Mich.

Proposals are wanted until Jan. 29 for the superstructure for a bridge across the East Branch of Nimishillen Creek, at Canton, O., by P. L. Manley, County Auditor.

The Commissioners of Gibson County are considering the advisability of replacing several wooden bridges with iron structures.

The plans for the new Selby Avenue bridge, at St. Paul, Minn., are nearly finished. The structure will be 1,050 ft. long, 28 ft. high at the centre span, with 28 ft. roadbed and sidewalks 6 ft. wide. The estimated cost is $80,000. The bridge will be of masonry, iron and steel.

The Detroit River Winter Railway Bridge Co., which was chartered last winter, is to apply for an amendment authorizing the construction of a high level bridge for railroad purposes for use throughout the year from near Mudson or Sandwich across the Detroit River.

The Georgia Quincy Granite Co., of Macon, Ga., has the contract for the building of an iron and stone bridge at Madison for the Covington & Macon road. The contract price is $8,000.

The city engineer of Toronto, Ont., has made his report on the proposed College street bridge. The projected structure will cost nearly $40,000. The report has been referred to the council.

A viaduct is being built at Venice, Ill., over the tracks of the Chicago & Alton, Indianapolis & St. Louis, and Wabash roads, where the Merchants' bridge approach crosses at Newport. The structure will be completed this week.

The new bridge of the Jacksonville, St. Augustine & Halifax River over the St. Johns River at Jacksonville, Fla., has been completed, and was opened for traffic last week.

A company is being organized at Daytona, Fla., to construct a bridge across the Halifax River at that point.

The Harrisburg Bridge Co. has filed a bill against the People's Bridge Co. asking the Court to grant an injunction to restrain the latter from completing a new bridge across the Susquehanna River. It seeks to test the right of the People's Co. to erect a bridge within 300 ft. of the old structure.

The Montreal Bridge & Terminus Co. has been organized to construct a railroad bridge across the St. Lawrence River at Montreal.

The city engineer of Birmingham, Ala., has been instructed to advertise for bids for building the proposed bridge at Twenty-first street.

The Baltimore & Harford Turnpike Co. has just completed a new iron bridge spanning Herring Run, near Baltimore, Md., andopened it to travel.

The Millers' Trust Co., of Minneapolis, Minn., has recently purchased tracks of land on the Mississippi River, near the city, and it is stated that it is proposed to build a new bridge over the river below the present Tenth street bridge.

Proposals are wanted until Feb. 1 for the erection of a new bridge across Hampton River at Elizabeth City, Va., by the board of supervisors.

A bill has been introduced in the New York State Senate providing for a new bridge over the East River, from Broadway, Brooklyn, to Grand street, New York. The Commission shall comprise the Mayors and Comptrollers of New York and Brooklyn, and two Commissioners are to be appointed by the Mayors of New York and Brooklyn. Bonds to the amount of $15,000,000 are to be issued, half by each city.

The Central of New Jersey will soon replace its double-track bridge at Point of Rocks, near Jersey City, N. J., with a four-track iron bridge.

W. A. West, of Aiken, S. C., will receive proposals until Jan. 21 for rebuilding a bridge near Hamburg, N. C.

The Port Aransas Co. has asked bids for constructing five short iron bridges at Corpus Christi, Tex.

It is proposed to erect a bridge over the railroad tracks at West Genessee street, Syracuse, N. Y.

J. J. Mitchel, county judge, Florence, Ala., will receive bids until Feb. 10 for erecting a 180-ft. iron bridge across Cypress Creek, in Lauderdale County.

A new county bridge will probably be built across North Chickamauga Creek, near Chattanooga, Tenn.

The mayor of San Antonio, Tex., has asked for proposals until Feb. 1 for the construction of three truss bridges across the San Antonio River.

Manufacturing and Business.

The Detrick & Harvey Machine Co., of Baltimore, Md., a corporation, has been organized to succeed the firm of Detrick & Harvey, and with increased facilities will continue the manufacture of open-side iron planers, machine tools, special and general machinery. The capital stock is $150,000. J. S. Detrick is President, and Alexander Harvey is Secretary and Treasurer.

The name of the Bucyrus Foundry & Mfg. Co., of Bucyrus, Ohio, has been changed to the Bucyrus Steam Shovel & Dredge Co. This name better describes the business of the company, steam shovels, dredges and railroad wrecking cars being now the principal articles made by it. The capital stock will be increased to $150,000 to accommodate an increasing business, and for the necessary extension of the plant. There will be no change in the management.

The Latrobe Steel Works, of Latrobe, Pa., have ordered the machinery to double their capacity for making tires. Wm. Tod & Co., of Youngstown, O., are building the tire mill engines, which will be duplicates of those built for their first mill.

The American draft and buffing apparatus, made by the American Continuous Draw-Bar Co., of Aurora, Ind., has been applied to 280 cars recently completed for the G. F. Swift Refrigerator & Packing Co., of Chicago.

The Mills Interlocking Switch & Signal Co., of Chicago, has been chartered in Illinois to manufacture interlocking railroad signals and switches. The capital stock is $1,000,000. F. J. Hoyt, Milton Weston and M. B. Mills are incorporators.

The Central Iron & Steel Co., of Brazil, Ind., has commenced the manufacture of railroad spikes, and has erected a separate building for the purpose, which is fitted up with a 10-inch train of rolls, a large gas heating furnace, and four Acheson patent spike machines, with a daily capacity of 300 kegs of 200 lbs. each.

The Pittsburgh Reduction Co. of Pittsburgh, manufactures of aluminium, has let a contract for an enlargement of its plant, which will increase its capacity six times over the present output. A new building will be erected 70 x 120 ft., in size, which will contain two 250 h. p. Westinghouse compound engines, three 208 h. p. Babcock & Wilcox boilers and a 25,000 candle power dynamo of the Watt type.

William Tod & Co., of Youngstown, O., have under construction blowing engines for the Clifton Iron Co., Ironton, Ala.; Salem Furnace Co., Salem, Va.; Vanderbilt Iron Co., Birmingham. Ala.; and also Porter-Hamilton engines for Schoenberger & Co., Pittsburgh; Harbison & Walker, Pittsburgh, Pa.; Latrobe Steel Works, Latrobe, Pa., and Carnegie, Phipps & Co., Beaver Falls, Pa.

These two companies have been incorporated in Illinois:

The Car Truck Supply Co., of Chicago, with $200,000 capital stock, to manufacture the Hubbard self-oiling car journals. W. S. Bugberg, J. H. Campbell, William Taylor, are incorporators.

The American Electric Motor Co., of Chicago, to manufacture electric motor apparatus for steel cars. The capital stock is $1,000,000. The incorporators are: R. G. Gelstein, J. W. Adams, and Lewis M. Hopkins.

Iron and Steel.

A contract has been awarded to the Linden Steel Co., of Pittsburgh, for furnishing 661 tons of protective deck plating for the new battle-ship Texas, at 6.9c. a lb., thus amounting to $102,164.

Riter & Conley, of Pittsburgh, are erecting the furnaces and hot blast stoves of the Monongahela Furnace Co., at McKeesport, Pa., and expect to complete two furnaces by May 1.

The Ironton Rolling Mill Co. has been organized to lease and operate the works of the New York & Ohio Iron & Steel Co., at Ironton, O. J. H. Mouiton is President of the company and C. M. Buchannan is Secretary and Treasurer.

The Alexander Laughlin Co., of Cleveland, has received an order from the Fort Payne Rolling Mill, Fort Payne, Ala., for all the gas furnaces and artificial gas producers necessary to equip the plant. These furnaces will be equipped with eight gas producers, built in blocks of four each, and will be arranged in a novel manner.

Application has been made for a charter in Pennsylvania by the the Lukens Iron & Steel Co., of Coatesville, to manufacture iron and steel. Charles Huston, Charles L. Huston, Robert B. Haines, Jr., Joseph Humpton and other well-known iron men are incorporators.

A general assignment for the benefit of the creditors of the Glamorgan Iron Co., of Philadelphia, has been filed. The liabilities of the company amount to $280,000. The assets are estimated at $250,000.

The Rail Market.

Steel Rails.—The market is quiet, with sales of 10,000 tons reported in the East and 5,000 tons at Pittsburgh. No sales are reported at Chicago, but it is thought that some have been made, nevertheless. The prices quoted are $35 at mill in the East, $35@$36 free on cars at Pittsburgh mills and $37.50 at Chicago. It is believed that these prices have been shaded a number of times.

Old Rails.—Quotations in the East remain unchanged. At Pittsburgh sales of old iron rails have been made at $29, delivered, and old steel rails have brought $24@$24.50. At Chicago $26.50 has been given for old iron rails and $21.25 for steel rails.

A New Car Sealer.

Mr. A. R. Gibson, Freight Agent of the Valley (Ohio) road, has recently patented a car seal. It is said that the cost of it will be much less than that of any other on the market, which is made possible by the use of tin in connection with a wire shackle.

The Goldie Spike.

We are informed that the New York Central & Hudson River Railroad has given Messrs. Dillworth, Porter & Co. an order for 8,500 kegs, 200 lbs. each, of the Goldie spike. First orders for the introduction of the spike have been taken in the month of December for over 4,000 kegs on 13 new roads.

THE SCRAP HEAP.

Notes.

The supreme government of Peru has just signed the Grace bondholders' contract, which was authorized by Congress on Oct. 29 last.

The engine house of the Southern Maryland road, at Brandywine, Md., was burned on last week, together with two locomotives and some machinery. The loss is about $30,000.

A newspaper item says that the Vandalia officers are so much pleased with the working of the electric headlight that they have decided to equip the 14 engines which haul the night trains with it.

The New York, Lake Erie & Western has discharged 30 men from the Port Jervis shops and considerable numbers from other shops along the line. The light coal traffic is given as the reason for this reduction of force.

Prince Bismark has proposed in the Bundesrath the adoption of a uniform standard of time throughout the Empire for the better working of railroads and mails and the mobilizing of troops. He suggests the fifteenth degree of longitude east of Greenwich.

The Chicago, Burlington & Quincy has supplied its dispatchers' offices and stations at division terminals with electric clocks, which are wound by the force of the electric current and which are automatically set by the wire from the observatory every day.

The Pennsylvania announces that a stenographer and typewriter will run on the Pennsylvania limited between New York and Pittsburgh to attend to the correspondence of such passengers as care to avail themselves of his services. A special compartment will be fitted up for the purpose and the letters will be mailed from the train. The new arrangement will go into effect on Feb. 1.

A subject which has afforded the scribblers "filling" for many inches, wholesale resignations being reported, is summarized by one dignified reporter as follows: "William Welsh, a baggagemaster on the Philadelphia & Reading, wore a Prince of Wales beard. He was asked to shave it off by the superintendent, and he told that official to go to—'the bottom of the sea.' Mr. Welsh is now looking for employment."

The Northern Central grain elevator No. 3, at Lower Canton, Baltimore, was destroyed by fire Monday night last. The building was valued at $300,000, and was insured locally. The loss on the corn stored is estimated at $280,000, and it is divided among individual shippers and covered by local insurances. The British steamer Sacrobasco, lying near the wharf, was destroyed by flames from the elevator. Three of the Sacrobasco's crew perished.

Articles of incorporation of the Denver Union Railway & Terminal Co. have been filed in Colorado. The incorporators of the company are J. K. Choate, Willard Teller, Wm. Ashton, J. B. Gilchrist and Scott Bryan, all of the Union Pacific road. The purposes of the company are to purchase or lease lands and rights of way, and to build foundries and machine shops, round houses and other buildings for the construction and repair of locomotives, cars and rolling stock.

A Commercial Traveler's Terrible Ride.

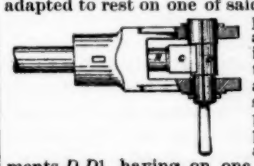
A St. Paul dispatch of Jan. 3 says: Frank B. Hooper, a traveling agent from Dayton, O., has sued the Northern Pacific for $10,000 damages. Last Saturday night—a stormy one—he got on a train at Glyndon, Minn., between the first coach and the baggage car. He tried to get in the front door of the passenger coach, but the conductor, after trying to open it for a moment, declared it locked and leisurely strolled away down the car aisle, although Hooper begged to be taken in, as it was then blowing at a great rate and was very cold. By this time the train was going at a high speed. Hooper tried to keep his feet by hanging onto the door knob, but became numbed and the platform being icy he could no longer stand. He slipped down on his back, threw one leg around the railing post, and with one hand grasped the brake stand. In this way he rode into Fargo, when it was found that he was badly frozen from the top of his head down the right side to the ankle. The right hand is so badly frozen that the fingers will probably have to be amputated.

Canadian Railroads.

The Dominion government returns give 12,163 miles of road as being in operation in Canada, representing a capital of $727,180,000. Eight years ago the Dominion government adopted a policy of voting a subsidy ranging from $3,200 to $6,400 per mile to every new railroad enterprise, and since then 101 companies have received money or land grants. In all 58 of these companies have signed contracts for the construction of the roads, covering an aggregate distance of 2,252 miles; the money subsidies amount to $9,261,107, and of this sum $5,783,455 had been paid up to November last. There are 32 companies, with a projected mileage of 715 miles, which have been granted aid to the extent of $2,892,500, but have not yet entered into any contract for the construction of the lines. In the northwest land grants to the amount of $19,788,744 acres have been voted to 11 companies, having a mileage of 2,711 miles. More than one-third of these land grants, or 6,880,000 acres, has been allotted to the Winnipeg & Hudson Bay road for a projected distance of 650 miles, of which only 40 miles has been graded. The longest line completed last year was the Qu'Appelle, Long Lake & Saskatchewan from Regina to Prince Albert, with a branch to Battleford, of which about 100 miles has already been finished. Before the close of the present year trains will be running into Prince Albert, about 260 miles north of Regina.

Device for Pulling Crossheads from Piston Rods.

A patent has been taken out by Mr. J. W. Wood, of Altoona, Pa., on a device for pulling crossheads from piston rods. The following is the nature of the patent as given by the claim: As a device for pulling crossheads from piston rods, the tapered and internally-grooved segments D D^1, in combination with a strut adapted to rest on one of said segments and against the piston rod, and a wedge adapted to enter the grooves in segments D D^1 and force them apart, all substantially as and for the purpose specified. As a device for pulling crossheads from piston rods, the tapered and internally-grooved segments D D^1, having on one face a groove a^2, in combination with a strut consisting of a block G, adapted to rest on the segments, a bar H, having a point J, adapted to fit on to the block G and rest against the end of the piston rod, and a washer adapted to fit between the block G and bar H, all substantially as and for the purpose specified.



RAILROAD GAZETTE

Published Every Friday,
At 73 Broadway, New York.

EDITORIAL ANNOUNCEMENTS.

Contributions.—*Subscribers and others will materially assist us in making our news accurate and complete if they will send us early information of events which take place under their observation, such as changes in railroad officers, organizations and changes of companies the letting, progress and completion of contracts for new works or important improvements of old ones, experiments in the construction of roads and machinery and in their management, particulars as to the business of railroads, and suggestions as to its improvement. Discussions of subjects pertaining to* ALL DEPARTMENTS *of railroad business by men practically acquainted with them are especially desired. Officers will oblige us by forwarding early copies of notices of meetings, elections, appointments, and especially annual reports, some notice of all of which will be published.*

Ad vertisements.—*We wish it distinctly understood tha we will entertain no proposition to publish anything in this journal for pay,* EXCEPT IN THE ADVERTISING COLUMNS. *We give in our editorial columns* OUR OWN *opinions, and those only, and in our news columns present only such matter as we consider interesting, and important to our readers. Those who wish to recommend their inventions, machinery, supplies, financial schemes etc., to our readers can do so fully in our advertising columns, but it is useless to ask us to recommend them editorially, either for money or in consideration of advertising patronage.*

It will be noticed that at the annual meeting of the American Society of Civil Engineers last Wednesday action was taken to reconsider the appointment of a committee to formulate a series of standard rail sections. This committee was appointed in conformity with the will of the Society as expressed by letter ballot. and the proposition for reconsideration will take the same course. The main argument brought against the appointment of this committee is, that it is not in the province of the Society to make standards. That we shall not now discuss. There is another argument which was not brought out, but which seems to us at least as weighty. That is, that the time has not yet come for an attempt to establish standard sections. Not enough is known about the newer designs of rails to warrant making them standard. We are decidedly of the opinion that the general forms recommended by the late committee are in the right direction, but it seems wise to try them a while before incorporating them into standards. Moreover, much new experience is now being had with heavy sections, and altogether we believe that the lessons of the next two or three years will be of immense value—perhaps of more value than those of any like period in the past.

The brake-shoe committee appointed by the Master Car-Builders' Association, which has recently appointed three sub-committees to make preliminary tests, is actively working to prepare a series of road tests about April 1, and will issue in about two weeks a circular, giving full instructions to those who may wish to furnish devices to be tested. It will also contain a description of the proposed tests, the methods to be followed in making them, and the required dimensions of the shoes to be furnished the committee. As the number of tests of each kind of shoe will necessarily be limited, manufacturers who make shoes which differ only in the character of the material, will do well to early consider which of the different varieties they will furnish. One of the most essential requirments to be met is that the shoes shall produce a maximum coefficient of friction. In making a recommendation, probably this consideration will be given the most importance, and next to that will come the question of wear and cost. Undoubtedly, there will be a wide variation in the coefficient of friction of different shoes, and also a difference in the friction of shoes of the same general construction, but differing slightly in the character of the material. As such differences will be likely to have considerable weight with the committee, it might be well for manufacturers to experiment themselves with the shoes which they expect to furnish. All shoes furnished will be required to conform exactly to dimensions and must be carefully ground or turned to fit. Accompanying this circular will appear drawings of some of the apparatus to be used, and the committee hopes, by the publication of this information considerably in advance of the tests, that those who have a pecuniary interest in the results, and all who are interested from a scientific standpoint, will submit their criticisms, as the committee desires to obtain results which shall be beyond question, either from a practical or a scientific standpoint.

The agreement between the Union and the Central Pacific with regard to through connections and through freight is to be welcomed on grounds of public policy. When one road was sending freight to San Francisco via Portland, and the other was diverting whatever it could to the southern route, the net result was that the direct line forming the natural channel for fast freight movement was not utilized to anything like its full capacity. It was bad for the railroads to have to handle their goods by indirect routes instead of direct ones, and to have to fight when they might co-operate. It was bad for the public to have the roads at cross purposes, and to have its business done by longer and less convenient routes. The outcome shows clearly the advantage possessed by a through line under existing conditions. Had the Union Pacific not controlled the Oregon Short Line, it would have been at the mercy of its rival. As it is, it has fought on equal terms, until, as we may hope, fighting will be no longer necessary,

On the whole, it looks as though the chief result of the meeting of the Interstate Commerce Railway Association was to gain time. Preparations were made to reorganize without actually reorganizing. The action of the Union Pacific and Northwestern was formally declared to be contrary to the articles of agreement; but no indication was shown of doing anything about it. With the amount of traffic which most of the roads can now command, matters can perhaps be left to take their own course for a few months to come. To have declared the agreement between the Union Pacific and the Northwestern to be correct would have involved, in the opinion of many, a conflict with the theory of the original articles of association. By condemning the Union Pacific and Northwestern, the authorities of the association are able to uphold it in theory. In practice, a few irregularities like this can, perhaps, be overlooked. It is like the case of the prohibitionist who was "in favor of the law but agin its enforcement." This probably represents with fair accuracy the views of Messrs. Adams and Hughitt.

In another column will be found a letter from a man who seems to think that petroleum is good enough to light cars with. He wants to know of instances in which cars have taken fire in the summer from other sources than the locomotive fire box. We have not looked carefully over the record of accidents last summer, but we remember one, and only one, case in the four months, May–August, in which a wrecked passenger car was said to have been set on fire from a lamp. There were a number of fires in passenger wrecks, but all were traced to locomotives, or to heaters, or unexplained, except the one instance mentioned. Nevertheless, oil lamps may have been responsible for several of them for anything that can now be known. It is often, if not usually, extremely difficult to know exactly the origin of a fire in a passenger train wreck, but it is not probable that it often originates from the lamps. That it does sometimes, and that in other cases it is intensified by the presence of petroleum, there can be no doubt. We are all familiar with experiments like those mentioned by our correspondent, in which it is shown that petroleum will extinguish a flame. On the other hand, we are all familiar with instances in which it helped ignition and added to the rapidity and intensity of combustion. One of the earliest recorded cases of this kind was the contest between the Hebrew prophet and the prophets of Baal. The student of Mark Twain will remember how completely Elijah got the bulge on the heathen by his knowledge of the properties of petroleum. The dangers in lighting trains by petroleum are two: It may happen that the flame of a lamp comes in contact with hangings, upholstery or splintered wood saturated with oil and starts a fire. This is perhaps a somewhat remote danger, but it exists. Or it may happen that fire already started is aggravated by the presence of oil. So long as other methods of lighting are available that are not excessively costly, are much cleaner, do not vitiate the air so much and are less troublesome to trainmen, it does not seem worth while to incur any additional danger by the use of oil lamps.

It is evident that but few inventors of railroad devices take the trouble to read the reports of the various railroad conventions, or if they do they do not profit by them. One superintendent of motive power now makes it a practice to answer all applications for permission to send devices for trial, with the question, "Have you read what the convention reports say regarding the matter, and does your device meet the requirements therein stated and possess the characteristic pointed out as desirable?" Often the answer is that the applicant had never heard of such reports, or had forgotten all about them. This ignorance of valuable work that has been done by the convention committees is continually cropping out, and it is an obstruction in the way not only of those inventors who are not informed of the action of the committee, but to a considerable extent of those who have taken pains to thoroughly inform themselves, because the patience of the railroad men whom they have to meet is severely tried by the loss of time required to bring the inventors who are not well posted up to a full realization of the demands of service with which they ought, by reason of previous work of the convention committee, to be familiar. Nowhere is this lack of knowledge more noticeable than in the case of some of the most recent and valuable reports, such as those pertaining to car couplers, brake foundation gear and brake beams. Probably the greatest comparative ignorance in proportion to the great amount of information obtained by and given in the long reports of the committees is in the case of train brakes. The essentials of a well ordered and properly acting train brake seem to be but little understood and appreciated by inventors, and in deed by many railroad men, who by reason of their office and employment ought to know all about them. The records of the labors of the railroad convention committees are, in many cases, valuable expert opinions which are worth money to inventors, and when they can be obtained for the price of the annual reports, there is no excuse for ignorance of their scope and recommendation.

Vertical Plane Car Couplers in Service.

There is a movement on foot to thoroughly investigate the relative merits of various designs of Master Car-Builders' couplers now offered for sale. This movement has been brought about by the extended application of the vertical plane coupler within the past year, and by reason of the large outlay of money which the application of such couplers demands, it being the policy of the more progressive railroad companies to inspect all material most carefully which pertains directly to safety in operation and which involves the expenditure of large sums. Of course, it is true that the failure of some of the couplers in service has induced a spirit of investigation, but it is doubtful if those failures alone would cause an extended interest in the relative merits of couplers such as now seems to be shown. The character of the investigations consists in a careful record of service performed and a series of laboratory tests.

On the Chicago, Burlington & Quincy a photograph is made of every broken vertical plane coupler and knuckle, and prints from the negative are placed on file, with a complete description of the conditions under which such breakage took place, so far as can be learned, together with a careful description of the character of material, the nature of the breakage, and also a statement of the condition of that portion of the coupler which is unbroken, but which may be strained, bent, or cracked. Orders have been sent over the line of the road to carefully preserve and send into the headquarters of the Superintendent of Motive Power all broken vertical plane couplers, of whatever sort, and to send therewith as much information as possible regarding the breakages and conditions under which they took place. On the Chicago & Northwestern practically the same move is being made, and, in addition, they are making drawings of the breakages and of couplers tested. In the laboratories of these and other roads tests are being made of the tensile strength of all couplers in use and offered for use, and some interesting results have been obtained.

Out of 561 cars equipped with the vertical plane coupler on the Burlington road, and from all cars with vertical plane couplers passing over that road, there have been removed but 19 bars during the past year, and 30 knuckles. The Burlington purchases at the present time only wrought-iron knuckles, but seven of the knuckles removed for breakages were of cast steel, probably from foreign cars. The broken wrought-iron knuckles show a fracture of peculiar character resembling cast steel, but which may be due to the use of a cold short iron or the suddenness of the rupture. It will be noticed that the 30 failures just mentioned are about 2.7 per cent. of the couplers in use on the road, whereas during the same time the company expended the following amounts of money for and purchased the following numbers of

links, pins and Potter drawbars for the C., B. & Q. road alone, not including the proprietary lines:

60,000 links	$13,305
100,797 pins	12,846
6,826 Potter drawbars	29,990
Total cost	$56,142
Approximate number of cars in use	22,000, or 44,000 bars
Number of renewals of drawbars	6,826
Percentage of renewals of draw bars	15½ per cent.
Cost of drawbars, links and pins, per car in service, per year (a rough estimate)	$2.55

Of course, these figures are only roughly approximate owing to the difficulty of separating the bars supplied to foreign cars, but as the cost of vertical plane couplers is estimated under like conditions, they may be comparative. The cost of the 19 vertical plane couplers, at $12.50 each, is $237.50. Thirty knuckles, at about $3.50 each, is $105. Total $342.50 for 561 cars, or 34 cents per car. This result may be objected to as being based upon data altogether inadequate, but granting all reasonable allowance for that, there still remains a large showing in favor of the vertical plane bar, particularly when it is remembered that the cost for labor, delays and damages is not counted in the cost of the renewals of the Potter bars. Probably the showing in favor of the vertical bars would not be as great if they were compared with the other types of link bars, because the Potter is well known to be an expensive bar to maintain. This is well shown in the case of the C. & N. W. road when the change from the Potter type to one of their own design caused a reduction of the cost of maintenance at least one-half.

The laboratory tests show several peculiar and interesting results; the couplers on the market to-day vary in tensile strength from 67,000 pounds to 90,000 pounds when pulled with a link attached to a pin placed in the pinhole in the knuckle. When two couplers are hooked together and pulled in the same machine the results average about 10,000 pounds less than the above figures. That is to say, the vertical plane couplers so far tested have less strength to resist a pull when coupled together than when pulled with a link, by about 9 to 12 per cent. The experimenters explain this by stating that when two couplers are pulled together the bearing at the time of the fracture is moved out to the extremity of the knuckles, that is, on the very point, and thus the leverage is increased about 10 per cent. The point of failure in the laboratory tests is not constant. In some cases the knuckles fail, in others the drawbar, and again the locking pin. The failures do not always take place in the same point for the same design. So far the couplers tested in the laboratory show the material to be good of its kind; that is to say, the material in the knuckles shows a fair quality of cast steel or malleable iron, as the case may be, and the material in the head seems to be as good malleable iron as can be produced of the thicknesses used. Also, so far as the laboratory tests go, the malleable iron knuckles are decidedly inferior to the steel knuckles. In all cases the pivots, whether trunnions or pins, are badly injured, as well as the locking devices, before the knuckles fail.

In service but few couplers have been broken with a pull. Nearly all breakages appear to be the result of buffing blows, and the points of fracture are distributed almost uniformly over the knuckles and bars. Hardly any point can be found where the couplers have not been fractured. The material used, as indicated by the character of the breakages in service, that is, from buffing blows, is not of the character which indicates great tenacity or ductility. Nearly all of the breaks resemble fractures of castings rather than of forgings, and to all appearances a majority took place with little or no bending of the parts; that is, most of the material breaks before it bends much. Some of the malleable iron and most railroad men familiar with tests of malleable iron, claim that the malleable iron used in couplers is too thick to give the best quality of that material, and state that the material would be stronger if made thinner. It is further stated that thick malleable iron castings are not malleable in the true sense of the word, but really are good annealed castings, and that malleable iron is quite a different material. However this may be, it is well known that there is a limit to the thickness at which good malleable iron castings can be made, but whether malleable iron drawbars as now made have passed this limit of thickness is yet a matter of conjecture. Service has thus far only proved in this regard that malleable iron for knuckles has not been a success. The steel used in knuckles has been purchased at prices ranging from five to seven cents per pound, which is low for good cast steel, if one is to judge by the prices paid for steel castings for other purposes requiring great strength, which are sold at eight to nine cents.

The principal question now is whether in paying $25 per car for the Master Car-Builders' vertical plane coupler, in place of $7 per car for Potter drawbars, one is not justified in requiring the vertical plane coupler to stand as much pull, when coupled either with another vertical plane coupler or with a link, as the Potter drawbar and the ordinary link drawbars will stand. The specification for links now purchased varies from 90,000 to 95,000 pounds, and recently a carload of links was rejected because they would only stand 85,000 pounds. The average laboratory strength of links show 100,000 to 135,000 pounds. The average of a large number of good links in two laboratories is about 115,000 pounds, while the Master Car-Builders' vertical plane couplers thus far tested withstand only 90,000 pounds at the maximum, and much less at the minimum. To show that but little knowledge exists among the car coupler companies themselves regarding the strength of their devices, it is but necessary to state that they are claiming that their couplers stand 150,000 pounds.

An argument is offered to show that the Master Car-Builders' coupler should not be required to stand as much as a link. This is based on a claim that when all cars are fitted with vertical plane couplers there will be much less slack in the train, and, therefore, less strain on the coupling. But as the day when all cars will be thus fitted is considerably ahead of us, is it not best to design couplers now and in the near future to withstand the service which they will actually have to meet during the next ten years or so? Again, when the vertical plane coupler is coupled with a link to an ordinary drawbar, there is even more link slack than in the case of two link bars coupled together, and therefore there would be, according to the argument above mentioned, even more stress on the coupling during the transition period than is now common with link couplers.

It is also argued that only a small number of vertical plane bars fail in service during pulling, and that therefore there is reason to believe that the pulling strains are not so great but that they can be easily met by the couplers in use. It is also said that the average link in actual use is, owing to a lack of careful general inspection and specification, a weak affair, having only a resistance of 50,000 to 60,000 lbs., and that it is such links that break rather than the couplers under heavy tensile strains. But it is well known that good links do break in actual service, and that the strains are sufficient in amount to produce such breakages, and therefore it seems reasonable to conclude that it would not be wise to put into service for a coupling any device that was not at least as strong as the specified strength of links, which it has been found necessary to adopt. It is further argued that the number of vertical plane couplers which break by pulling in service bears quite as large proportion to those which break by buffing blows as the broken good links bear to the number of broken drawheads broken by buffing blows, and therefore that the results of service do correspond with those of the laboratory, and indicate that automatic couplers are as severely strained in service by pulling as are the links, and that such couplers may be expected to fracture under pulling strains as often as the better class of links when they are of equal strength.

There is a continual change going on in the construction of draft rigging, and during the past year several new draw gears have been brought out which have an increased resistance to pulling strains with which the designers may well be pleased. Recent tests in a laboratory of one of these draw gears, which costs no more than the ordinary draw gear, showed its resistance to be 150,000 lbs. when the bolts pull through the timbers. In resistance to buffing blows these gears are likewise stronger than the ordinary form, and their general adoption is probable. Several designs of the ordinary type of draw gear tested show only resistance varying from 70,000 to 90,000 lbs. The demand for better and stronger draft gears and an increased interest in the tests of and specifications for links have helped to call attention to the strength of vertical plane couplers.

Since M. C. B. couplers have been extensively used many changes have been made in what were at first considered to be essential requirements. For instance, it was early argued that couplers which were open and exposed to sleet and snow would become inoperative by reason of the freezing of water in the head. The fallacy of this has been well shown by the results in service. It was at first supposed that unlocking devices lifting from the bottom would alone be satisfactory, and that lifting devices by means of chains from the top of the pin would result in broken chains and attachments, and this proved to be the case in several designs; but at the present time, after trials of various devices for lifting the pin from the bottom, there is an almost universal move toward lifting devices from the top, together with a reduction of the number of parts used for unlocking. Some early designs were built with an eye wholly to strength, but it was soon found that the wear of the locking devices had quite as much to do with the success of the couplers as their ultimate strength, and now much attention is paid to the resistance to wear of the locking pins. In one case several thousand couplers were placed in service which had a high ultimate strength and a great resistance to buffing blows, but which soon gave out by reason of the wear of the lock. This device has been remedied by a radical change in construction.

Some attempts have been made to furnish couplers of the combined vertical plane and link-and-pin type, but this has in each case been a failure, because the increase of functions has compelled changes in the designs which have interfered with the strength when operated as a vertical plane device. Attempts have been and are being made to reduce the shock and thereby the breakages of couplers by introducing cushions and springs into the heads and knuckles, but as yet such devices have not had sufficient trial in service to warrant opinions as to their merits.

Several changes are offered in the contours of the coupling faces differing somewhat from the M. C. B. standard lines. One of the changes, that of beveling the interior face of the knuckle, seems feasible, and it meets with favor in the eyes of railroad men; but so far no practical results have been obtained which show whether or not the change is an advisable one.

The market is now well supplied with a variety of designs to choose from, and more couplers are appearing. It is noticeable that the newer designs average better than several years since, and some of them are constructed with a view to remedying the defects developed thus far in actual service, and there is a tendency on all sides to change designs to meet the requirements resulting from experience in hard freight service.

It is almost too soon to draw general conclusions as to the value of the M. C. B. standard vertical plane coupler in heavy freight service, yet it is evident that its use reduces the total outlay for bars, pins and links, to say nothing of the saving in time, labor and damages resulting from the breaking of trains on grades. Probably the most gratifying of all the results of service are those which indicate almost to a certainty that a satisfactorily strong coupler can be made within the limits of the standard contour provided a good quality of material be used.

Income Bonds.

The contest over the affairs of the Philadelphia & Reading calls attention to some of the dangers attendant upon present methods of railroad finance.

Income bonds have some advantages; they are also subject to serious drawbacks. The advantages are best seen in a situation like that of the Atchison to-day. In the Atchison reorganization it was necessary not merely to adjust the exchanges to the value of different securities, but also to their risk. Some investors wished a sure return, even though it were very moderate; others were willing to take more risk for the sake of increased chance of profit. The needs of the former class were met by an issue of mortgage bonds at low rates of interest. To prevent foreclosure, the company will only need to earn the comparatively small fixed charges on these bonds. Any excess up to five per cent. on the face value of the principal, or 10 per cent. on its original cost, will go to the income bondholders. They will receive their interest if it is earned: if it is not earned, the company will be protected from danger of foreclosure. At first sight, nothing could seem fairer or more simple.

Who is to determine how much is earned? This question at once introduces us to the difficulties and dangers of the subject. In any railroad, no matter how well managed its affairs, there is always a certain degree of doubt as to its actual condition. There is no fixed and automatic rule as to what may be charged to construction account, or what should be paid for out of current earnings. There are a few well-recognized general principles, but they are altogether too general to be made to fit each case as it arises. One of the hardest duties of the financial managers of a railroad is to determine the actual amount of net earnings.

Sometimes the practical dangers connected with the decision of this problem are not so great as the theoretical difficulties. If the question simply is whether the stockholders shall receive a larger or smaller dividend, any slight misjudgment will correct itself in the long run. If dividends this year are made too large, the available surplus for subsequent years is diminished; if they are made too small, the capital account is brought into so much better condition that there is a

virtual accumulation of undivided profits. This is understood by the great body of intelligent investors. The public did not value New York Central stock below par when that road was only dividing four per cent.; it does not value it any higher at present on account of its extra dividend. A comparatively small body of investors cares so much for having money to-day as to be unwilling to see it reserved for the future when a conservative policy seems to dictate such action. People who absolutely must have their two or three per cent. every six months ought to invest in bonds rather than stock; and to a great extent they have actually done so. On the whole, a stock is valued by the condition and earning power of the property, rather than by the temporary rate of dividend.

But if the interest on an income bond is passed, there is no compensating benefit. If the management decides that the interest has been earned, the bondholder receives his money. If, on the other hand, the management chooses to spend that same money for new construction and to charge it to maintenance, he suffers an almost complete loss. The money is taken away from the bondholder; the benefit of it goes to other interests in the property quite as much as to him. Instead of being a transfer of money from the present to the future, as is the case when stockholders fail to receive a dividend which has been probably earned, it becomes a transfer from one set of security holders to another.

Several causes combine to increase the danger from this source. In the first place the managers represent an interest wholly distinct from the income bonds. They are elected by the stockholders. When they act in a way adverse to the immediate demands of the income bonds, their course at once gives rise to suspicion, and produces strained relations. Even if their decisions be made in good faith, the conflict of interests gives a partisan character to the whole affair. In this respect, preferred stock, even when non-cumulative, has a decided advantage over income bonds. The preferred stockholders have a direct voice, and sometimes a disproportionately large one, in the choice of directors. The questions of income are determined by the representatives of different sides, and not in an *ex parte* council.

So great are the possibilities of trouble of this kind that a voting trust like that of the Atchison is the almost necessary correlative of a large issue of income bonds, unless the security is to become a wholly speculative one. If the income bondholders are not to have any share in the determination of the affairs of the road, they must at least know who is to decide matters for them. To give the stock absolute control and leave the incomes none at all is to put the power out of the hands of those who are most affected by its exercise. The income bondholders lie just on the margin, where a slight change of policy in making up accounts will give them full interest or nothing at all. In this view the value of their securities is perhaps more affected by the action of the directors than that of the stock itself. To burden them with all this liability and give them no assurance as to the character of the management is contrary to the most fundamental principles of public policy.

The more complicated the questions decided, the worse the case becomes. The combination of a coal business with that of a railroad company makes the position of the income bondholders more precarious because it increases the opportunity for variations of judgment on the part of managers and outsiders both. It is perfectly conceivable that, in a system like the Reading, the authorities themselves should have had a somewhat mistaken impression of the actual state of affairs. But any such misjudgment was productive of such bad results, and furnished so many opportunities for speculative changes in value, that the sufferers can hardly be blamed if they put a worse construction on some matters than the facts themselves fully warrant The system itself is at fault.

Steam Space in Locomotive Boilers.

Sometimes in reviewing designs of the latest locomotive we wonder when the limit will be reached in the reduction of steam space capacity; that is, steam space capacity in proportion to the demand for steam per minute. Not a few locomotives are now being built with the same steam space in cubic feet which was allotted to the older locomotives, such as those built by the Mason, Rhode Island, Hinckley and Baldwin works in the early part of the present decade; and yet these new engines are intended for a service which requires the generation of no less than 100 per cent. more steam per minute. Just where the limit in this reduction lies it is difficult to say; but it is evident from the reports of wet steam and entrained water in locomotive cylinders that the limit has been reached in some cases. It is not to be expected that less steam space in proportion to the demand can be allowed in locomotive boiler than in stationary boiler practice; rather to the contrary, owing to the rapid circulation of the water, the contraction of the water spaces, and the surging of the whole mass of the water caused by the movement of the engine. It may be expected that more steam space is necessary in proportion to the demand for steam if the same economy is to be obtained.

Among some of the New England locomotive builders there used to be what might be called manufacturers' secrets. Among those which were carefully guarded were the offset of the link frog, lap of the valves, the amount of counterbalance in the driving wheel, the lift of the throttle valve, and last and by no means least, the height of the water line above the centre of the boiler. When it became necessary to make a "crack" engine all of these secrets were embodied, and in addition to the well-known trick occasionally resorted to, of turning back the hand on the steam gauge, not a few cases are on record where the gauge cocks were located at a minimum distance above the crown sheet. One old boiler maker of considerable reputation, who used to design the locomotive boilers himself, used to advise his favorite assistants that whenever they wanted to make a particularly economical engine they must keep the water line as low as possible. The reasons for this he used to state were that the boilers with high water lines always delivered wet steam to the cylinders, and he used to impress the fact on the minds of his apprentices by calling attention to the large amount of steam space in stationary boilers found necessary for good economy.

It is not difficult to believe that this piece of locomotive lore had some foundation in fact, and that in it there is an element of truth, because we are now meeting with difficulty from contracted steam spaces in locomotive boilers in this country, and the evidence from Great Britain and the continent tends to show that the locomotives there used, although not so hard driven, are found to be running with steam containing a too large percentage of moisture. The evidences from abroad, in their most striking form, consist of a variety of designs of strainers and obstructions placed in the dome to prevent water from reaching the throttle, and the use of several domes. The loss resulting from wet steam is too well known by engineers to be one of the largest of all losses liable to be met with in ill designed steam engine plants to need further explanation here, and it is probably sufficient to call attention to the existence of designs of locomotive boilers, particularly those which are constructed without wagon tops, to bring to mind the danger which we are now running with some designs, of sacrificing economy to a gain of water capacity and tube heating surface by raising the water line.

The bridge floor and guard rail system described in the *Railroad Gazette* of Nov. 1 last was subjected to a severe test by a collision on Jan. 6, and behaved in a manner highly gratifying to its makers and tending strongly to prove that its value is many times its cost. This floor is the invention of Messrs. J. D. Hawks, Chief Engineer, and O. F. Jordan, Roadmaster, of the Michigan Central, and its essential features are: sleepers only 3 in. apart, three longitudinal steel rails between the track rails, fastened with Bush interlocking bolts, and a rail the length of the bridge in the centre of the track on the *under* side of the sleepers, the same being bolted through to the middle rail on the upper side. A freight train stopped on the bridge (which is a deck bridge 600 ft. long and 50 ft. high), so that the caboose was just at the entrance. A following freight, very heavy, and running at high speed, crashed into the caboose with such force as to overturn the caboose and 10 empty coal cars. They were badly crushed, and portions of the wreck were forced alternately to the right and the left. All of the car bodies and all but five of the trucks went into the stream, but these five trucks were broken up and crowded together, so that when the engine stopped there was a pile 10 ft. high in front of it. This pile was pushed about 200 ft., but the bridge was not damaged more than $5 worth, and the colliding engine, with all its train, remained on the track. The pilot of this engine was made with horizontal wooden bars, a pattern which, under ordinary circumstances, would be crushed in so severe a collision as this, and almost certainly derail the engine; but in this case—and this is the peculiar point in favor of the floor system—the pilot, though pressed downward with great force, slid along the five rails beneath it, and was thus undoubtedly the means of lifting the wreckage sufficiently to throw it to one side with force enough to clear the engine and the following cars. This, with the great strength of the whole floor system, in all probability saved two or three of the 150-ft. spans of the bridge, which, in so disastrous a collision, would ordinarily stand a rather small chance of escaping blows from the broken trucks and other wreckage of sufficient severity to cause the bridge to fall. About 300 bolts were broken, most of them being in the track rails, but the rails all remained in line, and the sleepers likewise. Trains were run over the bridge at usual speed as soon as the wrecked cars were cleared off. The superiority of a deck bridge, in case of a severe collision, was shown in a marked degree by this occurrence.

The Johnson Railroad Signal Co. has the order for the complete signaling of the Harlem River branch of the New York, New Haven & Hartford. This branch is double track, 12 miles long. Its eastern terminus is at New Rochelle, N. Y., where it joins the main line, and the western is at Harlem River, a few hundred yards east of the Mott Haven station of the New York Central & Hudson River. The line is to be extended to a connection with the N. Y. C. at Mott Haven, but it will enter the tracks of the latter facing *north*. This indicates that the new connection is for freight purposes only, though in case of a blockade on the present passenger line between New Rochelle and Mott Haven the company would here have an alternative route by which to run passenger trains to the Grand Central station. The 12 miles of the branch is to have a regular block system the same as is now in use on the main line, with Sykes locks. In addition to this, there will be interlocking towers at the crossing of the Port Morris branch of the New York Central, at two drawbridges and at four other points close to Harlem River, there being 52 levers in the seven towers. Two pairs of highway crossing gates are also to be included in the plant. The Johnson Company also has an order for block signaling apparatus for 26 block stations on the New York, Lake Erie & Western, together with a number of interlocking machines for the extension of the block system and interlocking on that line. The block signals are to be on the Eastern, Delaware and Susquehanna divisions, but will not have the Sykes locks at present.

The recent fortunate escape of a dozen injured persons from a train wreck on the Chesapeake & Ohio, where continuous steam heating was used, followed by the burning of five cars, including a large quantity of valuable overland mail, on the Union Pacific, Jan. 9, has afforded a forcible argument for safe apparatus which the continuous-heater men have not failed to use. The Union Pacific derailment was caused by a broken switch rail, and the fire started from the Baker heater in the mail car. On the same road, two days later, another mail car was set on fire by an explosion in the coil of a heater, and some of the mail was destroyed.

A number of locomotive engineers of the Central of New Jersey who were removed and given positions as firemen and yardmen several months ago, on account of color blindness, have recently asked, through their Grievance Committee, to be restored. We are glad to observe that Superintendent Olhausen refused their demand, and that the men were sensible enough to acquiesce. Requests for such unreasonable and even dangerous action as this are among the most foolish acts of the engineers' brotherhood, and go far to injure their cause when they present reasonable demands.

NEW PUBLICATIONS.

Transactions of the American Institute of Electrical Engineers. December, 1889.

This number contains a report by Mr. Charles J. Reed, on the Form and Efficiency of Incandescent Filaments, and one by Mr. P. B. Delany, on Telegraph Line Adjustment, describing the device which was illustrated in the *Railroad Gazette*, Nov. 1, 1889. This publication contains each month an index to current electrical literature. It may be had of Mr. R. W. Pope, Temple Court, New York City. The price is 50 cents.

Journal of the New England Water Works Association. December, 1889.

This issue of the *Journal* contains an account of the fall meeting held last September, with the address of the President, a paper by Mr. Glover on water works records, and one by Professor Brown, on analysis of water. Copies may be obtained by addressing Mr. Albert S. Glover, Newton, Mass. The price is 75 cents.

TRADE CATALOGUES.

Screw Machines made by Brown & Sharpe Manufacturing Co., Providence, R. I.

This is a pamphlet of 34 pages, giving illustrations and description of four or five screw machines and a great variety of pieces made by them. Although these machines are designed primarily for making screws, it has been found that it is profitable to employ them for other purposes, as may be judged from the fact that in the shops of the Brown & Sharpe Co. only one machine out of every eight is usually employed for this special work. Three-eighths of the machines are ordinarily used in finishing studs, nuts, washers, etc., while one-half of them are employed on small wheels, levers or cams for sewing machines or on small parts of machine tools.

TECHNICAL.

The Louisville Caisson Accident.

We have been unable to get particulars of this accident (which happened 12:20 a. m., Jan. 10) sufficient to form an opinion as to its cause. Waiting fuller information, we publish extracts from an interview with Mr. Charles Sooysmith, President of Sooysmith & Co. This interview appears in the Louisville *Courier-Journal*. "This is

the first accident we have had which has resulted in such terrible loss of life. I cannot tell the cause, except in the general way, that the air seems to have been let off, and the water rose quickly and drowned all but the four men who escaped. There was no possible occurrence, or person, outside to cause the accident. As to just what was done, or happened, inside, it can probably never be known. It would be almost a relief to me if I could see the cause of this accident in some defect or fault that could be avoided in the future, but I can find none. The structure and machinery are strong and perfect, and the men are not only the most competent in this line in the country, but they have a spirit of care for each other's safety, which has been one of the chief causes of our freedom heretofore from loss of life.

"I know Knoch, the foreman, was not an inefficient man. He had worked for us as foreman of caisson work before, at the Sibley, Mo., bridge, and in other places. As to a complaint being made against him, the same thing might be said against every man who ever bossed a gang. Our superintendents had seen a great deal of Knoch, and his work had always been considered good, and he himself a careful man.

"I am quite confident that it all occurred in a moment and without warning. When Knoch went to blow off the air in the chamber to settle the caisson lower on one side, if there had been any sign of what was coming he could have turned on the valve and let the air come in again, and stopped its escape. But I think there was a sort of quicksand, and that, without warning, this sand gave way, let the caisson fall on one side and in a moment the interior was being deluged with sand and water, and there was no time left Knoch to stay the flood by the usual precaution. The men who were found there became wedged in the lower door, leaving space for air to escape from the chamber. When the upper door was opened by the four who escaped, if there had been no obstruction, the lower door would have closed automatically; but as the men were obstructing it, the pneumatic arrangement was defeated, and when the upper door was opened the air escaped, leaving no resistance to the flood of sand and water. This is only a theory, and is based on the principle that sand is treacherous and liable to give way when least expected."

St. Louis Merchants' Bridge.

The system embracing the Merchants' Bridge & Terminal Co. will be in operation by May 1. The steel work on the bridge was practically completed last Sunday, and the iron for the track will be here by Jan. 10, and will then be laid at once. The material for the bridge approaches at each end, 450 feet in length, will be on hand within 30 days. By March 1 that part of the system extending from the National stock yards in Illinois to Biddle Street in St. Louis will be in actual operation, as the roadbed is rapidly approaching completion. Between Biddle street and the Union Depot the road will be an elevated one, and the construction of this part of the system must necessarily be slower, but the Phœnix Bridge Co., which has the contract, undertakes to finish the work by May 1.—*St. Louis Republic.*

The Eames Street-Railroad Brake.

The Eames vacuum brake is being used on the Newport, R. I., electric street railroad. The brakes are applied by means of the customary flexible diaphragm. The vacuum is obtained by means of a small pump, operated by the car axle, which maintains the vacuum in the reservoir. A three-way cock at each end of the car connects the brake chamber diaphragm with the vacuum reservoir or with the atmosphere, at the will of the driver. The towed car is fitted with a brake chamber and diaphragm, the necessary brake gear, and hose couplings, so that the driver of the motor car can apply the brake simultaneously to all the wheels of the train. The Thomson-Houston Co. has made exhaustive tests of this brake and adopted it for use in connection with that system of electric street railroads.

An Electric Brake.

A series of experiments to test a newly invented electric brake were recently made on the London & Northwestern between Birmingham and London. The brake has been brought out by Professor Forbes and Mr. I. A. Timmis, of London. A train of carriages fitted with it is being constructed for use on a line in Russia. The brake works upon the inside face of the wheel—or rather upon an iron disk fitted to it. Opposite the iron plate is another encircling the axle, so fixed that it does not revolve with the wheel, but can be moved laterally so as to came in contact with, or recede from, the circular plate. It contains a powerful magnetic coil, and when vitalized by the turning of a handle in the brake van it is attracted to the plate on the wheel, thus acting as a brake. A coach fitted with the brake was slipped while traveling at the rate of 42 miles an hour, and was brought to a standstill in 450 ft. Of other results during a trial lasting three hours, the best was the stopping of the car in 60 yards when traveling at 30 miles an hour.

The Commission of Inquiry at Panama.

The Technical Commission of Panama Canal Inquiry arrived at Colon by the steamship "Amerique" the first week in January, and at once crossed to Panama. The commissioners are: M. Germain, President and Chief Engineer; M. Chaper, Civil and Mining Engineer; M. Lagout, Engineer of Bridges; M. Cousin, Belgian Civil Engineer; M. du Chatenet, Civil and Mining Engineer, and M. Nouailhac, Special Delegate.

RAILROAD LAW—NOTES OF DECISIONS.

Powers, Liabilities and Regulations of Railroads.

In Kentucky the Court of Appeals rules that where a contractor, under contract for the construction for a railroad bridge, which provides for periodical measurements and estimates by the engineer in charge, accepts payments from time to time according to the estimates, he is bound thereby, in the absence of allegation and proof of fraud.[1]

In Texas the Federal Court decides that where receivers of a railroad company, under an order of court authorizing them to take charge of all the company's property of every description, including leases, carry on the road, and have the use and benefit of certain sleeping cars, with knowledge of the terms of a lease under which the cars were held and used by the company, they become the assignees of the company, and are bound to perform its covenants as to the care and return of the leased cars. But interest will not be allowed on the sum to which the car company is entitled as damages under the terms of the lease.[2]

In Iowa there was a mortgage on the property of a railroad and a second mortgage on its income. The income mortgage covered the main line of the mortgagor company, and also its separate division. After the decree foreclosing the first mortgage, the holders of certain of the income bonds brought an action to enforce redemption against the P. division. A settlement was had in which complainants expressly reserved their rights against the mortgagor company and its members, but released all claims and demands against the purchaser company or against any of its railroad or other property by reason of said income bonds, and the action was dismissed. The Federal Court holds that the relense barred the right of those parties to enforce a redemption of any property passing to the purchaser under the foreclosure sale.[3]

A Mississippi statute, passed in 1888, provides "that all railroads carrying passengers in this state (other than street railroads) shall provide equal but separate accommodations for the white and colored races, by providing two or more passenger cars for each passenger train, or by dividing the passenger cars by a partition so as to secure separate accommodations." The Supreme Court decides that, as this act operates only upon the carriage of passengers from points within the state to other points also within the state, it is not an interference with interstate commerce.[4]

In Alabama, a railroad company was incorporated in 1831, its existence being limited to 50 years. S. conveyed a strip of land 100 ft. wide to said company, on which the tracks were afterwards laid; the *habendum* clause limiting the term to 50 years, or so long as the charter of said company might continue. In 1833 the charter was amended so as to permit the state to purchase the company's property at the end of 50 years, and if no such election was then made the charter was to be continued for ten years, with a like option at each recurrence of that period. Still later, S. conveyed the land, including said strip, together with the reversion therein, to plaintiff's ancestor. All the rights of the T. company became vested in the defendant corporation by judicial sale. The original act incorporating the T. company authorized condemnation of land in case the company and the owner could not agree on the price thereof. The T. company ceased to own or use the land in controversy in 1847, but it had been continually used for railroad purposes by the successors in title of the T. company. The T. company was never judicially dissolved, though it ceased to do business. The Supreme Court decides the estate would not terminate by the lapse of the 50 years, or by the fact that the company had ceased to do business, as the continuance of the charter referred to in the deed meant the continuance of the chartered rights or privileges, which still existed, though exercised by another body corporate.[5]

In New York four persons who were common directors in two different railroad corporations became the assignees of a construction contract made by one of the companies, by which they became entitled to receive its stocks and bonds, and by which they made a large profit. Afterwards acting for the two companies, they executed a lease of the road and franchises of the company whose bonds and stocks they held under the construction contract to the other company, which bound itself to pay as rental certain sums to meet the interest on the bonds and dividends on the stocks, and which interest and dividends the lessee company guaranteed. The Supreme Court holds that the lease was an attempt by the directors to impose obligations on the lessee company for their own own private benefit, and was therefore invalid.[6]

In Texas the Supreme Court rules that under the state constitution authorizing a recovery of damages against a corporation "that commits a homicide through willful act or omission or gross negligence," there can be no recovery against a corporation on allegations that the employés of defendant were grossly negligent, and that the train was an extra, having officers of defendant on board, where there are no allegations showing a willful act, omission, or gross negligence of one representing defendant in its corporate capacity, as a corporate officer, nor averments of an approval or ratification of the acts of the agents of defendant.[7]

Carriage of Goods and Injuries to Property.

In Mississippi the Supreme Court holds that the failure of a shipper to comply with a stipulution on a bill of lading or express receipt that he shall file a written statement of his claim in the office of shipment is no defense to a suit for failure to deliver goods promptly, the office being fully cognizant of the negligence that caused the loss or delay.[8]

In Virginia the Court of Appeals rules that a carrier's liability ceases when he has delivered the goods in good order to a connecting carrier.[9]

In New York the Supreme Court rules that where, after goods have reached their destination, the consignee calls for them, and is mistakenly informed by the carrier that they had not come, but afterward he is notified by mail that they have, and two weeks later they are destroyed by fire in the carrier's warehouse, the consignee cannot recover their value on the ground of conversion, the carrier having done all it could to correct its mistake, and ample time to remove the goods having elapsed between the mailing of the notice and the date of the fire; and it is immaterial whether the consignee actually received the notice or not.[10]

In Mississippi the Supreme Court holds that a railroad is not liable for an injury inflicted by an animal on itself or by other animals shipped with it in the same car.[11]

In Illinois the original owner conveyed to J., for the purpose of building a railroad, a strip of land "150 feet wide, being 75 feet on each side of the following described line," with the condition that if the road was not constructed within three years the land should revert. J. conveyed to a railroad a strip of land "100 feet in width, being 50 feet on each side of the following described line," describing the same line as described in the deed to him, "hereby intending to convey all the interest vested in" J. by the conveyance above mentioned, "to have and to hold" "for the sole purpose of building, constructing, maintaining and using thereon a railroad." The Supreme Court rules that the second deed conveyed the strip 150 feet in width.[12]

In Indiana the Supreme Court holds that where a conveyance to a railroad company of a "right of way" over certain land does not specify the width of the land thereby conveyed, and the railroad company, about 18 years thereafter, takes possession under claim of title of a strip six rods wide—that being the amount it might legally condemn by the law of its organization—in an action to recover all of such strip except 30 ft., which it is alleged the grantee took possession of on the execution of the deed, the grantor retaining possession of the balance, a special finding that it was not intended by the parties to the deed to describe the right of way as 30 ft. wide, is not inconsistent with a general verdict for plaintiff.[13]

In Kansas the Supreme Court rules that where a railroad company procures a right of way over land held as a timber culture claim under the laws of the United States, the title thereto being still in the United States, the occupant can recover damages only for the diminished value of his interest in the land, and not for the diminished value of the land itself.[14]

In New York in an action against a railroad company for maintaining and operating its road in the street on which plaintiff's property was situated, it appeared that defendant and its predecessor had operated the road in the manner complained of before plaintiff acquired title to the premises. The court found as facts that defendant was authorized to maintain its road, but that it was not authorized to store empty cars on the track in front of plaintiff's property, and as a conclusion of law that plaintiff was entitled to damages therefor, and to an injunction against the further use of the track in front of plaintiff's property for the storage of cars. It did not appear when the street was opened, or what rights were reserved by the owners of property on it, or what rights the city or defendant's predecessor acquired. The Supreme Court hoids, that the conclusion of law was not ustified by the evidence.[15]

Injuries to Passengers, Employes and Strangers.

In the Federal Court it is ruled that a passenger who, while ascending the steps of the car, is injured by a brakeman falling against her—the latter being at the time standing on the railings of the platforms of the two cars engaged in the performance of his duty—has no right of action against the railroad company.[16]

In New York the Supreme Court holds that it is gross negligence for an engineer of an incoming train to run his engine between a passenger train and the waiting-room of a depot at a time when passengers might wish to take the train, but it is for the jury to determine whether a passenger who crosses the track, without looking toward the train, is guilty of negligence.[17]

In the same state, the Supreme Court rules that where a passenger entering a car begins an altercation with one of the company's servants, and uses indecent and insulting language to him, such as is calculated to produce an assault, the company is not liable for injuries received by him through such assault by the servant.[18]

In Mississippi, in an action against a railroad company for injuries to a passenger while getting off a train at her destination, it appeared that no stop was made, but that the train was kept in motion by a passenger who pulled the bell-rope. Plaintiff saw the rope pulled, knew it was pulled by a passenger, remonstrated with him, but left the train while in motion. The jury was instructed that, if the place was a regular stopping place for passengers, it was defendant's duty to stop; that failure to do so was a violation of public duty, and any one injured thereby could recover, though it appeared that one not an employé of defendant had, by pulling the bell-rope, caused the train to move. The Supreme Court decides that this was error, as it declared, in effect, that defendant's negligence was established by the movement of the train, without reference to whether or not the act of moving was the act of defendant.[19]

In Tennessee a freight conductor recovered a judgment against a railroad company for personal injuries received by him while in the company's employ. At the time of the injury, a passenger riding on the freight train with the consent of the conductor, who knew that this was against a rule of the company, was injured, and sued the company therefor. The Supreme Court decides that, the conductor being insolvent, the company could enjoin the collection of his judgment to the amount sued for by the passenger, until that suit was decided, and, if judgment was rendered against the company therein, have it satisfied out of the conductor's judgment, as the proximate cause of the injury to the passenger was, as between the railroad company and the conductor, permitting him to ride on the freight train against the rule.[20]

In Louisiana an ordinance of the city of New Orleans regulating the running of trains by a railroad on a certain street, required that the engine should always be in front of the train, and that a watchman with a red lantern or signal flag should be placed at each crossing while the train was in motion, and similar lights should be attached to each side of the train when in motion; and it prohibited the blowing of whistles or ringing of bells. A man was killed by being run over by a train while driving a float across the street about 7 o'clock in the evening. The evidence showed that the engine was not in front, and that there were no red lights on the train, or watchman with a red light at the crossing. The train consisted of ten cars, one engine and a tender, and had a crew of three men. The Supreme Court holds that the railroad was liable for the accident, as it was bound to observe extraordinary precautions for the safety of the public at street crossings, and, independent of the ordinance, it was bound to use the same degree of care as is found in its provisions.[21]

In New York the plaintiff approached a railroad crossing slowly, in the rear of another wagon; the gates were up. When near the track he stopped, looked, and listened, but heard nothing, and saw nothing; cars on the track obstructed his view; and just as his horses stepped upon the track they were struck by the engine. The evidence as to the ringing of a bell was very conflicting. The Supreme Court affirms a verdict against the railroad.[22]

[1] Henderson Bridge Co. v. O'Connor, 11 S. W. Rep., 957.
[2] Easton v. H. & T. C. R. Co., 39 Fed. Rep., 783.
[3] Simmons v. Taylor, 39 Fed. Rep., 682.
[4] L., N. O. & T. R. Co. v. State, 6 South. Rep., 203.
[5] Davis v. M. & C. R. Co., 6 South Rep., 140.
[6] Barr v. N. Y., L. E. & W. R. Co., 5 N. Y. Supp., 623.
[7] Wennt v. I. & G. N. R. Co., 11 S. W. Rep., 907.
[8] B. & O. Ex. Co. v. Cooper, 6 South. Rep., 327.
[9] McConnell v. N. & W. R. Co., 9 S. E. Rep., 1,006.
[10] Williams v. D. & H. Canal Co., 6 N. Y. Supp., 36.
[11] L., N. O. & T. R. Co. v. Bigger, 6 South. Rep., 234.
[12] Boone v. Clark, 21 N. E. Rep., 850.
[13] Ind. & V. R. Co. v. Lewis, 21 N. E. Rep., 660.
[14] C. K. & W. R. Co. v. Hurst, 21 Pac. Rep., 781.
[15] Mosner v. R. W. & O. R. Co., 5 N. Y. Supp., 807.
[16] Skinner v. Atchison, T. & S. F. R. Co., 39 Fed. Rep., 188.
[17] Hirsch v. N. Y. & G. L. R. Co., 6 N. Y. Supp., 162.
[18] Scott v. Cent. P., N. & E. R. Co., 6 N. Y. Supp., 382.
[19] M. & T. R. Co. v. Harrison, 6 South. Rep., 319.
[20] M. & C. R. Co. v. Greer, 11 S. W. Rep., 391.
[21] Curley v. Ill. Cent. R. Co., South Rep., 103.
[22] Anderson v. N. Y., L. E. & W. R. Co., 6 N. Y. Supp., 182.

General Railroad News.

MEETINGS AND ANNOUNCEMENTS.

Dividends.

Dividends on the capital stocks of railroad companies have been declared as follows:

Central of New Jersey, quarterly, 1½ per cent., payable Feb. 1.

Central Ohio, 3 per cent., on the common and preferred stock, payable Jan. 31.

Central Pacific, 1 per cent., payable Feb. 1.
Connecticut & Passumpsic, 2½ per cent., on the preferred stock, payable Feb. 1.
Evansville & Terre Haute, quarterly, 1¼ per cent., payable Jan. 21.
Huntington & Broad Top, 2½ per cent., on the preferred stock, payable Jan. 18.
Little Schuylkill Navigation, R. R. & Coal Co., 3½ per cent., and extra 1 per cent., payable Jan. 11.
Long Island, quarterly, 1 per cent., payable Feb. 1.
Louisville & Nashville, semi-annual, 3 per cent. in scrip, payable Feb. 6.
Mill Creek & Mine Hill Navigation Co., 5 per cent., payable Jan. 13.
Milwaukee, Lake Shore & Western, semi-annual, 3½ per cent. on the preferred stock, payable Feb. 15.
Mine Hill & Schuylkill Haven, 3½ per cent., payable Jan. 15.
Mount Carbon & Port Carbon, 6 per cent., payable Jan. 13.
Schuylkill Valley Navigation Co., 2½ per cent., payable Jan. 13.
Terre Haute & Indianapolis, semi-annual, 3 per cent., payable, Feb. 1.

Meetings.

Meetings of the stockholders of railroad companies will be held as follows:

Chesapeake & Ohio, special, Pace House, Richmond, Va., Jan. 20.
Indianapolis, Decatur & Western, special, Indianapolis, Ind., Jan. 30.
Little Miami, annual, Cincinnati, O., Jan 28.
Manitoba & Northwestern, annual, Winnipeg, Man., Jan. 20.
Mobile & Ohio, annual, 11 Pine street, New York City, Jan. 20.
Ontario, Carbondale & Scranton, annual, 119 Wyoming avenue, Scranton, Pa., Jan. 29.
Richmond & Allegheny, special, Pace House, Richmond, Va., Jan. 20.
St. Catherines & Niagara Central, annual, St. Catherines, Ont., Jan. 27.
St. Louis, Vandalia & Terre Haute, annual, Greenville, Ill., Jan. 21.
Western Counties, annual, Yarmouth, Nova Scotia, Feb. 12.

Railroad and Technical Conventions.

Meetings and conventions of railroad associations and technical societies will be held as follows:

The *Ohio Society of Surveyors and Civil Engineers* will hold its next annual meeting in Columbus, Ohio, beginning Jan. 21.

The *Association of American Railway Accounting Officers* will hold a regular meeting at the St. Charles Hotel, New Orleans, La., Jan. 22.

The *Canadian Society of Civil Engineers* will hold its next annual meeting at McGill College, Montreal, P. Que., Jan. 23.

The *Master Car Builders' Association* will hold its next annual convention at Old Point Comfort, Va. Rooms should be secured of Mr. F. N. Pike, manager, Hygeia Hotel, Fortress Monroe, Va.

The *New England Railroad Club* meets at its rooms in the United States Hotel, Beach street, Boston, on the second Wednesday of each month, except June, July and August.

The *Western Railway Club* holds regular meetings on the third Tuesday in each month, except June, July and August, at its rooms in the Phenix Building, Jackson street, Chicago, at 2 p. m.

The *New York Railroad Club* meets at its rooms, 113 Liberty street, New York City, at 7:30 p. m., on the third Thursday in each month.

The *Central Railway Club* meets at the Tift House, Buffalo, the fourth Wednesday of January, March, May, August and October.

The *Northwest Railroad Club* meets on the first Saturday of each month in the St. Paul Union Station at 7:30 p. m.

The *American Society of Civil Engineers* holds its regular meeting on the first and third Wednesday in each month, at the House of the Society, 127 East Twenty-third street, New York.

The *Boston Society of Civil Engineers* holds its regular meetings at Boston, at 7:30 p. m., on the third Wednesday in each month. The next meeting will be held at the American House.

The *Western Society of Engineers* holds its regular meetings at its hall, No. 67 Washington street, Chicago, at 7:30 p. m., on the first Tuesday in each month.

The *Engineers' Club of St. Louis* holds regular meetings in St. Louis on the first and third Wednesdays in each month.

The *Engineers' Club of Philadelphia* holds regular meetings at the house of the Club, 1,122 Girard street, Philadelphia.

The *Engineers' Society of Western Pennsylvania* holds regular meetings on the third Tuesday in each month, at 7:30 p. m., at its rooms in the Penn Building, Pittsburgh, Pa.

The *Engineers' Club of Cincinnati* holds its regular meetings at 8 p. m. on the third Thursday of each month at the Club rooms, No. 24 West Fourth street, Cincinnati.

The *Civil Engineers' Club of Cleveland* holds regular meetings on the second Tuesday of each month, at 8:00 p. m., in the Case Library Building, Cleveland. Semi-monthly meetings are held on the Fourth Tuesday of the month.

The *Engineers' Club of Kansas City* meets at Kansas City, Mo., on the first Monday in each month.

The *Civil Engineers' Society of St. Paul* meets at St. Paul, Minn., on the first Monday in each month.

The *Montana Society of Civil Engineers* meets at Helena, Mont., at 7:30 p. m., on the third Saturday in each month.

The *Civil Engineers' Club of Kansas* holds regular meetings on the first Wednesday in each month at Wichita, Kan.

Boston Society of Civil Engineers.

A regular meeting was held at the American House, Boston, Dec. 18, President FitzGerald in the chair, 39 members and 12 visitors present. Messrs. Benjamin W. Guppy and William J. Watkins were elected members.

Mr. Tidd, for the committee to consider the advisability of urging upon the Legislature the necessity of having the new maps of the state printed and placed in the reach of the people, submitted a report stating that there seems to be no question as to the desirability of publishing the maps. They embody information of special value and not readily obtainable elsewhere. At present the information is unavailable and the maps cannot be put before the country until Congress makes an especial appropriation for that purpose. The state of Massachusetts would doubtless be allowed the use of the plates on paying the expense of printing, and the maps could be ready for delivery in a few weeks. The committee therefore reports favorably. The state commission on topographical survey will recommend to the Legislature that an appropriation be made for printing a limited number of the maps. The report was accepted, and it was resolved that it was the sense of the society that a small edition of the map should be printed by the state.

A revision of the constitution and by-laws, as prepared by a committee, was adopted.

Mr. William E. McClintock read a paper entitled Some Methods of Heating and Ventilating School Houses, and Mr. Theodore E. Perkins read a paper describing the system of heating and ventilating introduced in the school buildings of Lynn, by Dr. Pinkham. Prof. S. H. Woodbridge, of the Institute of Technology, described a system of heating and ventilating suitable for small school buildings.

Illinois Society of Engineers and Surveyors.

The fifth annual meeting of the Illinois Society of Engineers and Surveyors will be held at Peoria, Ill., commencing at 1:30 p. m. Wednesday, Jan. 29, and continuing Jan. 30, and 31

The following are some of the papers that have been promised:

Engineering Features of the Operating Department of Railroads, E. L. Morse, Cazenovia.
Sharp Curves, Edwin A. Hill, Cincinnati, O.
Masonry Structures for Railroads, T. A. Allen, Terre Haute, Ind.
A change of Line on the C. & A. R. R., E. Philbrick, Chicago.
Interlocking Switches and Signals, Charles Hansel, Springfield.
Alterations in the Washington Street Tunnel, S. C. Colton, Chicago.
The Mounds Yard, S. F. Balcom, Champaign.
Notes on the Use of Cement Mortar, Prof. I. O. Baker.

The topical discussions which formed such an interesting part of the last programme will be continued. The committee on exhibit of drawings promises a full display. Reduced rates have been secured on part of the railroads, and it is expected that arrangements will be made with all railroads entering Peoria. Notice of such arrangements will be sent to members and to all others who request it.

For further information address, A. N. TALBOT, Executive Secretary, Champaign, Ill.

Northwest Railroad Club.

The first annual meeting of the club was held in St. Paul, Minn., Jan. 4. The old officers were re-elected for the ensuing year.

The Central Railway Club.

The annual meeting of the Central Railway Club will be held at the Hotel Iroquois, Buffalo, N. Y., Jan. 22. The business meeting will occur at 10:30 a. m., and at 3 p. m. the annual banquet will be given. It is expected that the attendance of representatives from the railroad clubs will be very large.

Western Railway Club.

This club will hold its next meeting Tuesday, Jan. 21, at 2 p. m., in its rooms, Phenix Building, Chicago.

The subjects for discussion are: "The Ventilation of Cars," and "The Efficiency of the Link as Compared with other Valve Motions." Mr. W. G. Creamer will read a paper on ventilation.

Western Society of Engineers.

The annual meeting and dinner of the Western Society of Engineers was held at Kinsley's, in Chicago, on the evening of Jan. 8. A large proportion of the members were present, and the names showed that some of the most prominent engineers in the West take a lively interest in the success of the Society. The event of the evening, outside of business matters, was a paper prepared by E. L. Corthell, illustrated by a fine set of views, thrown upon a screen by a stereopticon. The paper was a review of some of the recent chief engineering structures in the world, and of the projected ones. Probably but few of the members present previously realized the dimensions of the projected bridges which were illustrated by this paper, some of the proposed structures being considerably larger than any bridges now building. Among these may be mentioned the North River bridge, New York City, and the bridge across the Mississippi at New Orleans. Among the engineering structures illustrated were the Forth bridge, the Eiffel tower, the Manchester ship canal, and some prominent large bridges of the United States. The meeting was a great success. The membership at the end of last year showed an increase of 40 per cent. during the year. The officers for the coming year are: President, L. E. Cooley; First Vice-President, Robert A. Shailer; Second Vice-President, William R. Northway; Secretary, Treasurer and Librarian, John W. Weston. Mr. Benezette Williams was added to the Board of Trustees.

PERSONAL.

—Mr. Charles Lang, General Freight and Passenger Agent of the Rio Grande & Eagle Pass, has resigned.

—Mr. Joseph Hickson, General Manager of the Grand Trunk, has been knighted by the Queen of England.

—Col. J. H. Averhill, Superintendent of the South Carolina road for a number of years, has resigned that position.

—Mr. R. A. Gambrill, Secretary of the Peoria, Decatur & Evansville Railroad for several years, died in New York last week.

—Mr. Jonas S. Heartt, of the firm of Jonas S. Heartt, of Troy, N. Y., manufacturers of car wheels, died in Troy last week.

—Mr. W. P. Harris has been appointed Superintendent of the Northern Division of the Charleston, Cincinnati & Chicago, with headquarters at Johnson City, Tenn.

—Mr. A. D. Dwelle, who recently resigned as Assistant General Passenger Agent of the Iowa Central, has been appointed Pacific Coast Passenger Agent of the Chicago, St. Paul & Kansas City.

—Mr. D. C. Allen, General Passenger Agent of the South Carolina road, has resigned, to become General Freight and Passenger Agent of the Cumberland Route of the East Tennessee, Virginia & Georgia, to succeed Mr. John B. Wrenn, resigned.

—Mr. William Moore, a prominent railroad contractor, died in Plainfield, N. J., Jan. 5, of pneumonia. He built the High Bridge Branch of the Central of New Jersey, and did considerable railroad work in New England, Pennsylvania and Florida.

—Mr. S. B. McConnico, General Agent of the Illinois Central, at New Orleans, La., has resigned that position to engage in mercantile pursuits. Mr. McConnico has been connected with the company for 20 years.

—Mr. George Butler, Assistant Treasurer of the Atlantic & Pacific, died in Brooklyn, N. Y., last week. He was Treasurer of the road at the time of the joint lease to the St. Louis & San Francisco and Atchison, Topeka & Santa Fe, and has since been Assistant Treasurer.

—Mr C. F. Meek has been appointed Assistant General Manager of the Colorado division of the Union Pacific system at Denver, reporting to the General Manager of the Missouri River division, in addition to his duties as General Manager of the Denver, Texas & Fort Worth.

—Mr. John G. Williams, Vice-President and General Counsel of the Terre Haute & Indianapolis, was elected Vice-President and General Manager at the recent annual meeting. This relieves President W. R. McKeen, who has heretofore been General Manager of the road, of part of his duties.

—Mr. Mason D. Benson, who was formerly Treasurer of the Fitchburg for 29 years, died at Cambridge, Mass., Jan. 12, at the age of 65. He entered the employ of the Fitchburg as a clerk in the treasurer's office in June, 1846, and was appointed Treasurer Feb. 9, 1859. He resigned that position in March, 1887.

—Mr. J. C. Lincoln, who was formerly Commercial Agent of the Missouri Pacific at Atchison, Kan., has been appointed Assistant General Freight Agent of the road at St. Louis, to succeed Mr. W. C. Stith, who resigned recently to become General Freight Agent of the Kansas City, Fort Scott & Memphis.

—Mr. Frank Lawlor, Division Engineer of the lines of the Chicago, Burlington & Quincy in Iowa and Missouri, has resigned to accept a position in the construction department of the Western Railroad of Uraguay, of which Mr. George C. Smith, late Chief Engineer of the Chicago, Burlington & Quincy, is Chief Engineer.

—Mr. A. Clark, who has been appointed Superintendent of the New Orleans & Northeastern division of the Queen & Crescent system, to succeed Mr. Edmund L. Tyler, who is now General Manager of the Atlanta & West Point and Western of Alabama, has been Trainmaster of the division for several years.

—Mr. Arthur G. Wells has been appointed General Superintendent of the Ohio, Indiana & Western. He has been Secretary of the General Superintendent of the Atlantic & Pacific road; Trainmaster of the New Mexico & Albuquerque division of that road, and recently Assistant to the General Manager of the Ohio & Mississippi road.

—Mr. Herman J. Falkenbach, General Passenger and Ticket Agent of the Columbus, Hocking Valley & Toledo, is to retire from that position shortly. He has been connected with the road since July, 1880, and was chief clerk in the general passenger and ticket department for five years. He has been General Passenger and Ticket Agent since March 1, 1885.

—Mr. Percy Y. Griggs, General Agent of the Freight Department of the Chicago, Burlington & Quincy at Buffalo, N. Y., died suddenly in that city, Jan. 12, at the age of 37. He had been in the service of the road for 17 years, beginning as a brakeman, and serving as agent at Council Bluffs, Clinton, Ia., Contracting Freight Agent at Chicago, Traveling Freight Agent and General Agent at Buffalo.

—Mr. Edson H. Graves, Superintendent of the Hastings & Dakota division of the Chicago, Milwaukee & St. Paul, died in Minneapolis, Jan. 13. Mr. Graves had been connected with the road since 1884, and has been Train Dispatcher, Assistant Superintendent of the Iowa & Dakota division, Superintendent of the Iowa & Minnesota division and Superintendent of the Hastings & Dakota division.

—Mr. Francis B. Clarke, General Traffic Manager of the Chicago, St. Paul, Minneapolis & Omaha, has resigned, and will join his family in Europe, where they have been residing for some time, and where a son is very ill. Mr. Clarke has been General Traffic Manager of the road since 1878. He was previously General Freight Agent of the West Wisconson (which was merged in the Chicago, St. Paul, Minneapolis & Omaha), between 1868 and 1872, and General Freight and Passenger Agent of the same road from 1872 to 1878.

—Mr. W. K. Gillett, Auditor of the Passenger Department of the New York Central & Hudson River road, will leave the service of the company Feb. 1, having accepted the position of Auditor of Disbursements of the Atchison, Topeka & Santa Fe, with offices at Topeka, Kan. Mr. Gillett has had experience in the Auditing Departments of the Pennsylvania, West Shore, Boston & Albany, and has been with the New York Central & Hudson River since Jan. 1, 1887. His successor on this road is Mr. J. F. Fairlamb, Assistant Auditor of Passenger Accounts.

—Mr. I. G. Rawn has been appointed Superintendent of the Richmond, James River and Peninsular division of the Chesapeake & Ohio, to succeed Mr. George W. Stevens, who has been made General Superintendent of the entire line. The office of Superintendent of Transportation held by Mr. Rawn has been abolished. Mr. Rawn was in the employ of the Cleveland, Columbus, Cincinnati & Indianapolis from 1872 to 1886 as telegraph operator, train dispatcher and train master. He was appointed Master of Transportation of the Kentucky Central in 1886 and in January last became Superintendent of the Cincinnati division of the Chesapeake & Ohio. He was later appointed Superintendent of Transportation.

—Col. T. M. R. Talcott, who was appointed First Vice-President of the Richmond & Danville in September, 1888, after a service of a year as Commissioner of the Southern Railway & Steamship Co., has resigned his position with the Richmond & Danville. Previous to his appointment as First Vice-President Col. Talcott had served the road for 14 years, from 1869 to 1883, resigning in the latter year his position of General Manager. He was later Vice-President and General Manager of the Mobile & Ohio.

Mr. W. C. Oakman has been elected First Vice-President of the road, to succeed Col. Talcott. Mr. A. B. An-

drews, formerly Third Vice-President, has been elected Second, and Mr. John W. Johnston, of Birmingham, has been elected Third Vice-President. The office of Fourth Vice-President has been abolished.

—The death of Mr. Samuel Keefer, C. E., at his home in Brockville, Ont., last week, removes one of the earliest pioneers of railroad construction in Canada. Mr. Keefer was born at Thorold, Ont., on Jan. 22, 1811. In 1839 he was appointed Secretary to the board of works for Lower Canada. From 1841 to 1853 he was Chief Engineer of the government board of public works, and in 1852 made a survey for the Sault Ste. Marie canal. In 1853 he resigned his position with the government to become Resident Engineer of the Grand Trunk, and surveyed the line between Montreal and Kingston. In 1857 he was appointed Government Inspector of Railways, and soon after Deputy Commissioner of Public Works, and held both places until 1864. His report upon the plans of the new parliament buildings at Ottawa was accepted by the Governor General in 1859. Mr. Keefer retired from public service in 1864 and engaged in the practice of his profession. In 1869 he completed the construction of the suspension bridge at Niagara Falls, at that time the longest single span bridge in the world. He received a diploma and gold medal for the design and description of this work at the Paris Exhibition in 1878. In June, 1880, he was appointed a member of the royal commission which was empowered to make certain investigations with reference to the Canadian Pacific. During the last few years of his life Mr. Keefer has lived quietly at his home at Brockville.

—Mr. William Stroudley, Locomotive Superintendent of the London, Brighton & South Coast Railway, died in Paris, Dec. 20. His latest locomotive, the Wilfred Blount, which took a gold medal at the Paris Exposition, is to be put in service on a French railroad, and Mr. Stroudley had gone to Paris to make the necessary arrangements. He was born in 1833 and began his career in a paper mill near Oxford, his birthplace. He quickly developed a faculty for mechanical engineering and entered railroad service in 1861 on what is now the North British line. In 1870 he became Locomotive Superintendent of the London, Brighton & South Coast. His work there consisted in a complete reorganization of the locomotive and rolling stock departments and as superintending marine engineering for the company. In all these departments he achieved great success, having been among the first to use high pressures in compound engines in marine engineering. Mr. Stroudley was one of the first to recognize the value of a system of interchangeability of parts and to carry out that system to its full extent in his own practice. He had but two types of locomotives and developed a workshop system of great simplicity. Our readers have in times past had much useful information from Mr. Stroudley's experience, and we have just received a blue print of a little detail of permanent way, sent shortly before his death, which is now in preparation for illustration. He was eminently a self-made man, having had but a very limited education, but developed a natural talent for mechanical engineering of a very high order.

ELECTIONS AND APPOINTMENTS.

Alabama Midland.—The annual meeting was held in Troy, Ala , recently, and the old Board of Directors and officers were re-elected.

Alton, Venice & East St. Louis.—The incorporators and first board of directors of this road are: H. D. Sexton, of East St. Louis; William E. Smith, Henry Watson, F. B. Job, John N. Drummond, H. J. Bowman, of Alton; T. J. Irish and John Weding, of Nameoki; A. E. Mills, of Upper Alton, and Frank McCambridge, of Venice, Ill.

Arkansas & Gulf.—The names and addresses of the officers of the company are as follows: W. R. Bergholz, President, 15 Cortlandt street, New York City; J. F. O'Shaughnessy, Vice President, 36 Wall street, New York; C. H. O'Dell, Treasurer, Mills Building, New York; Wm. Bonner, Secretary, Arkansas City, Ark., and Adolph Veith, Engineer in Charge, Arkansas City.

Atchison, Topeka & Santa Fe.—The authority of A. A. Robinson as General Manager has been extended over the Chicago line, the Chicago, Santa Fe & California, and J. F. Goddard, heretofore General Manager of that line has been given charge of the traffic department of the entire Atchison system. The circular making the appointment defines his duties as follows: His jurisdiction will extend to the management of the entire passenger and freight traffic of the whole system. The appointment of all officers and agents of the traffic department shall be subject to his approval, as well as all expenditures or liabilities in conducting the department. His jurisdiction will also extend to all business before state or federal commissioners and traffic organizations and meetings, except those within the jurisdiction of the legal department. He is also charged with the duty of maintaining rates, the observance of traffic arrangements, as well as all divisions of traffic, whether rail or water.

The following appointments have been made by the company: J. E. Meginn, Lumber Agent; headquarters at Kansas City. George M. Sargent, Commercial Agent, in charge of freight business; headquarters at Kansas City. F. A. Jackson, Commercial Agent, in charge of freight business, headquarters at Buffalo, N. Y., vice George W. Panzborn resigned. H. C. Dinkens, Traveling Freight Agent, with headquarters at St. Joseph, Mo. J. W. Hamilton, State Treasurer of Kansas, has been appointed General Live Stock Agent of the road, with office at Topeka, Kan., to succeed Eli Titus, who resigned to take the management of the American Live Stock Commission Co. at Kansas City.

Augusta & West Florida.—The company has recently elected these officers and directors: President, C. E. Smith, Washington, Ga.; Vice President, A. P. Wright, Thomasville; Secretary, Colden Rhind, Augusta; Treasurer, W. N. Mercier, Augusta; Chief Engineer, H. L. Sturdivant, Augusta. Directors: Jesse Thompson, W. N. Mercier, F. B. Pope, J. P. Verdery, Colden Rhind, Augusta; C. E. Smith, T. C. Hogue, Washington; A. P. Wright, A. T. McIntyre, Sr.; T. C. Mitchell, S. L. Hays, Thomasville; Robert Bearden, Moultrie; J. D. Maynard, Abbeville; W. W. Ashburn, Eastman; W. L. Phillips, Louisville; Benjamin Drew, Swan, Ga.

Baltimore & Cumberland Valley.—At the annual meeting of the stockholders of the road, held in Chambersburg, Pa., Jan. 9, the following directors were elected: David Wills, Gettysburg, Pa.; George B. Cole, John M. McPherson, Shippensburg, Pa.; J. M. Hood, Baltimore, Md.; J. P. Culbertson, W. F. Eyster, Chambersburg, Pa.; M. J. Foley, Baltimore, Md.; C. W. Homrichouse, Hagerstown, Md.; J. W. Humbird, Cumberland, Md. The board elected David Wills, President; D. F. Foley, Treasurer, and Thaddeus M. Mahon, Secretary.

Baltimore & Harrisburg.—At the annual meeting of the stockholders of this company held at Hanover, Pa., Jan. 8, the following were elected: President, A. W. Eichelberger of Hanover; Directors, J. M. Hood, W. H. Vickery, W. S. Rayner and C. W. Slagle, of Baltimore; David Wills and Reuben Young, of Gettysburg, Pa.; Jerome L. Boyer, of Columbia, Pa.; R. M. Wirt, L. P. Brockley and H. E. Young, of Hanover.

Baltimore & Ohio.—W. W. Peabody, General Superintendent of the Trans-Ohio system, having tendered his resignation to accept the vice-presidency of the Baltimore & Ohio Southwestern, division officers of the Trans-Ohio system now report to the General Manager at Baltimore.

Buffalo Dock & Connecting.—The directors for the first year are Albert G. Hatch, Henry M. Box, Henry D. Kirkover, Philo D. Beard, James Adams, of Buffalo, N. Y., and John C. Sheehan and C. J. Ryan, of New York City.

Camden, Sabine Pass & Louisiana.—The incorporators mentioned in the charter filed in Arkansas last week are A. S. Morgan, W. E. McRae, C. K. Sithen, J. B. Friedheim, H. P. Smelon and S. Q. Sevier, of Camden; K. G. McRae, of Mount Holly, and A. C. Jones, of Three Creeks. The directors have elected officers as follows: President, A. S. Morgan; Vice-President, W. E. McRae; General Manager, J. B. Friedheim; Secretary, S. Q. Sevier; Treasurer, C. K. Sithen; General Attorney, H. P. Smelon.

Central of Georgia.—The stockholders have chosen the following directors: E. P. Alexander, W. S. Chisholm, J. K. Garnett, E. M. Green, Abraham Vestburg, James Hall, C. H. Phinizy, P. Calhoun, John C. Calhoun, S. M. Inman, H. T. Inman, E. P. Howell, James Swann. The new directors are Messrs. Hall, Swann and Howell, who succeed Messrs. Gordon, Corner and Rawers.

Chesapeake & Ohio.—I. G. Rawn has been appointed Superintendent of the James River, Richmond & Peninsula divisions of the road, with office at Richmond. George Tozzer has been appointed Purchasing Agent of this road at Cincinnati, Ohio.

Chicago & Atlantic.—Charles L. Mayne, Acting Superintendent of the road, has been appointed Superintendent at Huntington, Ind., and F. A. Balme, Acting Car Accountant, has been appointed Car Accountant at Chicago.

Chicago, Burlington & Quincy.—W. S. Keenan, for some time past chief clerk in the General Passenger Agent's office, has been promoted to the position of General Traveling Passenger Agent for the company, with headquarters at Chicago.

Chicago, St. Paul & Kansas City.—Charles Nichols has been elected Assistant Secretary of the road to succeed John I. Thompson, resigned. His office will be in St. Paul. A. D. Dwelle has been appointed Pacific Coast Passenger Agent of this company, with headquarters at Tacoma, Wash.

Chicago, St. Paul, Minneapolis & Omaha.—Francis B. Clarke having resigned the position of General Traffic Manager, in order to devote his time to other interests, the office has been abolished. James T. Clark, under the title of General Freight Agent, will have charge of the freight traffic of this company, including the relations of that department with other companies. T. W. Teasdale will continue in charge of passenger traffic under the title of General Passenger Agent. The General Freight and Passenger Agents will report to the General Manager.

Cincinnati, Hamilton & Dayton.—Charles Wood, Assistant Engineer, has been appointed Assistant Chief Engineer, with office at Cincinnati, to succeed Joseph Ramsey, Jr., Chief Engineer, resigned to accept other service. N. R. Adriance has been appointed Assistant General Freight Agent, with office at Cincinnati.

Cincinnati, New Orleans & Texas Pacific.—E. L. Tyler having resigned the position of Superintendent of the New Orleans & Northeastern, A. Clark has been appointed to fill the vacancy, with office at New Orleans.

Cincinnati, Saginaw & Mackinaw.—The headquarters of James T. Gardner as General Manager of the company are at East Saginaw, Mich.

Cleveland, Cincinnati, Chicago & St. Louis.—At the time of the consolidation the road department was placed in the hands of the Superintendent of each division. It has now been put under the supervision of the Chief Engineer, W. C. Irwin, who will act under instructions from Joseph Ramsey, Jr., assistant to the President.

Colorado Midland.—Henry T. Rogers, General Solicitor, at Denver, has been elected Vice-President of the road also.

Columbia Central.—The incorporators named in the bill incorporating the company are: M. C. Mengis, Frank Brown, A. E. Booth, W. T. Beidler, J. R. Brewer, John P. Poe, Thomas M. Lanahan, David E. Conklin and others.

Columbus, Hocking Valley & Toledo.—The stockholders of the road held their annual meeting in Columbus, O., Jan. 14, and elected the following directors: One year, Charles Foster, of Ohio; P. W. Huntington, of Ohio, and James Kilbourne, of Ohio; two years: Charles B. Alexander, of New York; George W. McCook, of Ohio, and C. C. Waite, of Ohio; three years: Samuel D. Davis, of New York; Thomas F. Ryan, of New York, and C. B. Van Nostrand, of New York. There were 94,628 shares represented, the vote on all questions being unanimous. The board organized by the election of C. C. Waite, President; Samuel D. Davis, First Vice-President; W. N. Cott, Secretary and Treasurer, and J. T. Boothroyd, Assistant Secretary, New York.

Crookston, Fort Stevenson and Montana.—The officers of the company are: John McLean, President; Henry Burkhardt, Vice President; Arthur M. Stewart, Secretary, and John Crumb, Treasurer. The principal office is in Crookston, Minn.

Croton Valley.—The following officers and directors were elected at a meeting held at 48 Wall street, New York, Jan. 14: Cecil Campbell Higgins, President; William F. Humphrey, Vice-President; Isaac Aaron, Secretary and Treasurer. These officers, with the following persons, compose the board of directors: Percival J. Parris, George C. Lee, Louis D. Beck, J. W. Hardley, James S. Cushman, Charles H Scrymser, Hopper S. Mott, Gouverneur Morris and John C. Coleman.

Coudersport & Pine Creek.—The directors of this newly chartered Pennsylvania road are: F. W. Knox, Coudersport, Pa., President; W. G. Olmsted, W. K. Jones, James L. Knox, B. W. McClure and Isaac Benson, Coudersport; F. H. Root, Buffalo, N. Y.; D. D. Hamlin, Smethport, Pa.; M. E. Olmsted, Harrisburg, Pa., and F. H. Arnold, Port Allegheny.

Covington & Macon.—A. C. Goodyear has been appointed Master Car Builder at Macon, Ga.

Dayton & Union.—The annual meeting of the stockholders of the road was held in Dayton, O., last week. The following board of directors was re-elected: C. C. Waite, of Columbus; Robert Blee, H. H. Poppleton and George S. Russell, of Cleveland; Julius Dexter, F. H. Short and W. E. Zimmerman, of Cincinnati; R. D. Marshall, of Dayton, and J. D. Layng, of New York. The officers are: C. C. Waite, President; Robert Blee, Vice-President and General Manager; George S. Russell, Secretary and Treasurer; P. A. Hewitt, Auditor.

Delaware.—The company held its annual meeting at Wilmington, Del., Jan. 9. The following directors were elected: Christian Febiger, John P. Green, J. N. Dubarry, George Grayes, E. Tatnall Warner, Henry D. Welsh, Joseph R. Whitaker, Manlove Hayes, Alexander Johnson, James R. Ross, Thomas Curry, J. Turpin Moore and Charles J. Harrington. Christian Febiger was elected President, and Manlove Hayes Secretary and Treasurer.

East River.—The directors for the first year are: T. A. Patterson, of Brooklyn; Benjamin S. Henning, H. C. Helmer, Otto Andreas Jr., Alexander Curtis, C. H. Odell and J. C. O'Brien, of New York; Robert Whitehall, of Newburg, Grinnell Burt, of Warwick, N. Y., and C. W. Smith, of Chicago.

East Tennessee, Virginia & Georgia.—Maj. D. C. Allen has been appointed General Freight and Passenger Agent of the Cumberland route, with headquarters at Brunswick, Ga., to succeed Mr. John B. Wrenn, resigned. His territory will comprise the states of Georgia and Florida.

Erie & Pittsburgh.—The following officers and directors of the company were elected at the annual meeting held in Erie, Pa., Jan. 13: President, William L. Scott, secretary and treasurer, William Brewster, Erie, Pa. Directors: M. H. Taylor, Joseph McCarter and C. H. Strong, of Erie; Charles S. Fairchild, of New York, and George B. Roberts, of Philadelphia.

Hot Springs—Robert M. Smith has been appointed Passenger and Ticket Agent, and F. W. Gregory, formerly Assistant to the Freight Agent Smith, has been appointed General Freight Agent at Hot Springs, Ark.

Houston, Central Arkansas & Northern.—The following are named as incorporators in the charter filed in Arkansas: E. G. Merriam of St. Louis, Thomas Essex and George E. Dodge of Little Rock, and Charles E. Buckner and P. K. Savage of Dermott, Ark., and Guy Phillips of New York.

Houston & Shreveport.—The United States Circuit for the District of Louisiana has reversed the ruling of Judge Boarman in appointing S. B. McCutcheon Receiver for the road, which is the extension of the Houston, East & West Texas from Logansport to Shreveport, a distance of 40 miles. Judge Pardee appointed M. G. Howe, the present Receiver of the latter road, with similar power over the Houston & Shreveport.

Lackawanna & Montrose.—The following directors were elected at a recent meeting of stockholders: President, W. D. Lusk, Montrose, Pa.; H. L. Beach; H. P. Read, W. W. Williams, J. R. Cooley, T. J. Davies, J. Griffis, W. J. Mulford, D. Sayre, W. H. Jessup, W. G. Parke, E. P. Pope, and R. M. Bostwick.

Louisville & Nashville.—Fred D. Bush, district passenger agent at Atlanta, Ga., for the past seven years, has been promoted to the position of division passenger agent, with headquarters at Montgomery, Ala., vice G. M. Williams, resigned. Harry C. Piper, passenger agent at Chattanooga, Tenn., has been transferred to Atlanta, with the title of Traveling Passenger Agent.

Meriden & Tuscahoma—The company has filed at Montgomery, Ala., the following list of its directors: W. F. Glover, C. W. Robinson, W. H. Hardy, J. H. Knighton, W. N. Horn. The officers are: W. F. Glover, President; B. H. Warren, Secretary.

Mexican Gulf, Pacific & Puget Sound.—The following are named as the incorporators in the charter filed in Alabama: S. N Van Praeg, J. H. Cross, I. M. Aiken, E. C. Maxwell, J. W. Frater, Dennis Burns and A. G. Moreno, of Pensacola, Fla.

Mexican National.—T. D. Kline has assumed the duties of General Manager, vice Maj. John F. O'Brien, resigned. E. N. Brown has been appointed Superintendent of the southern division of the line with office in the City of Mexico, vice Henry Yonge, resigned.

Michigan Central.—A. J. Burt has been appointed Assistant Auditor of this company, vice F. Braisted, resigned, with office at Detroit, Mich.

Michigan, Indiana & St. Louis.—The directors of the company have elected Col. John Lee, of Crawfordsville, Ind., President.

Mississippi & Little Rock.—The officers of the company are as follows: President, Judge P. C. Dooley, of Little Rock; Vice-President, S. L. Starr, of Fairmount; Secretary, George R. Brown, of Little Rock; Treasurer, Oscar Davis, of Little Rock. These officers and R. S. Giles, of Ulm; G. H. Sanders, and T. C. Gunning, of Little Rock, constitute the Board of Directors.

Mobile & Ohio.—Ray L. De Pew, Acting Contracting Agent, has been appointed Contracting Agent, with office at 212 North Third street, St. Louis.

Montreal, Portland & Boston.—At the annual meeting of the company in Montreal, Jan. 15, the following were elected directors: George W. Hendee, of Morrisville, Vt.; Bradley B. Smalley, of Burlington; Albert P. Cross, of St. Albans; Arthur H. Gilmour, of Stanbridge, and J. Cassie Hatton, John L. Morris and Francis McLennan,

of Montreal. J. C. Hatton was elected President and A. H. Gilmour Vice-President.

New Orleans & Northwestern.—The New Orleans, Natchez & Fort Scott and the New Orleans & Northwestern have been consolidated under the above name, and the following directors elected: John H. Rice, B. F. Hammett, J. W Lambert, A. H. Foster, Waller Chenault, T. E. Morrison, J. S. Shields, T. K. Green, W. H Mallery. The following officers were elected: President, John H. Rice; Vice Presidents, Waller Chenault, B. F. Hammett, T. E. Morrison; Secretary, J. W. Lambert; Treasurer, W. H. Mallery.

New York & New England.—The main line of the road will, after Jan. 18, be operated in three divisions; the Western, from Fishkill to Waterbury, Conn., 78 miles; the Hartford, from Waterbury to Willimantic, Conn., 64 miles, and the Eastern, from Willimantic to Boston, 86 miles. R. E. Eavenson will be Superintendent of the Eastern division at Boston. Mr. Phelps, recently appointed Superintendent of the Western division to succeed G. M. Farley, resigned, will be Superintendent of the Hartford division at Hartford. C. N. Chevalier, Trainmaster of the Providence division, has been appointed Superintendent of the Western division.

New York, Ontario & Western.—At the annual meeting of the company in New York, Jan. 14, the following directors were elected for the ensuing year: Thomas P. Fowler, Joseph Price, Samuel Barton, Francis R. Culbert, John Greenough, Richard Irvin, Julien L. Myers, William H. Paulding, Harry Pearson, Albert S. Roe, Charles J. Russell, Eben K. Sibley, Charles S. Whelen.

Northern Pacific & Manitoba.—The annual meeting of this company was held at Winnipeg last week, and the following officers were elected: James McNaught, President; John W. Kendrick, Vice President; Hon. Joseph Martin, second Vice-President; J. M. Graham, General Manager; L. M. Randall, Secretary, and E. B. Morrison, Treasurer.

Nova Scotia Central.—G. W. Bedford, formerly Secretary and Treasurer, has been elected General Manager.

Ohio, Indiana & Western.—A. G. Wells has been appointed General Superintendent. He will have charge of train service, agencies and rolling stock for that company, and will have his headquarters at Indianapolis, Ind.

Omaha & South Dakota.—At a meeting of the stockholders of the company in Mitchell, S. D., last week, the following officers were elected: President, Gustavus P. Hosmer, of Lockport, N. Y.; First Vice President, Gen. John L. Pennington; Second Vice President, R. M. Springer, Forest City, S. D.; Secretary, J. K. Smith; Treasurer, Henry Hoffman, Blunt, S. D.

Pennsylvania & Northwestern.—The following officers of the consolidated company have been elected: President, Charles F. Berwind; Vice President Aaron Fries; Secretary and Treasurer, Frank S. Lewis; Directors: H. A. Berwind, John H. Converse, Aaron Fries, Stephen Greene, Samuel G. Lewis and John Reilly.

Philadelphia & Reading.—The annual meeting was held in Philadelphia, Jan. 13. The stockholders opposed to the re-election of Mr. Corbin as President of the company protested against the proceedings. Among those opposed to the regular ticket were Alfred Sully, R. K. Dow, Simon Wormser and Alfred Rice, of New York. The re-election of the old Board of Officers was accomplished through the vote of three of the four members of the voting trust. The following directors were elected: President, Austin Corbin; Managers, A. J. Antelo, Samuel R. Shipley, Thomas Cochran, George B. de Keim, Stephen A. Caldwell, George F. Baer; Treasurer, William A. Church; Secretary, William R. Taylor. There were 786,819 shares voted for this ticket.

Joseph S. Ward has been appointed Division Engineer of the Williamsport Division of the road. Mr. Ward was formerly Division Engineer of the New York Division.

Philadelphia & Reading Coal & Iron Co.—The following directors were elected this week at the annual meeting: President, George B. de Keim; Vice President, A. A. McLeod; Secretary, F. P. Kaercher; Treasurer, W. A. Church; Directors, Austin Corbin, S. P. Wolverton, W. G. Audenreid, George F. Baer, H. A. Dupont and A. A. McLeod.

Philadelphia, Wilmington & Baltimore.—The annual meeting of the stockholders of the company was held in Philadelphia, Jan. 13. The old board of directors was re-elected, with George B. Roberts, President; Frank Thompson, Vice President; J. C. Sims, Jr., Secretary, and R. W. Smith, Treasurer.

Pittsburgh & Virginia.—Ex-Gov. Fitzhugh Lee has been elected President. J. K. Edmondion, of Lexington, Va., is Treasurer.

Pullman Palace Car Co.—The following changes have been announced: E. M. Leamster, District Superintendent at St. Louis, transfered to El Paso, Tex., vice H. J. Clarde, assigned to other duties; S. F. Richardson, District Superintendent at Galveston, tranferred to St. Louis; J. E. Kinsey, Assistant District Superintendent at El Paso, appointed District Superintendent at Galveston; A. A. McHatton, Receiving Cashier at El Paso, appointed Assistant District Superintendent at El Paso; C. C. Chase, heretofore agent at Memphis, appointed District Superintendent.

Richmond & Danville.—Col. T. M. R. Talcott having resigned the First Vice-Presidency of the company, the following officers have been elected by the board of directors: W. G. Oakman, First Vice President, with office at No. 2 Wall street, New York City; A. B. Andrews, Second Vice President, with office at Raleigh, N. C.; John W. Johnston, Third Vice President, with office at Birmingham, Ala. The office of Fourth Vice-President, previously held by Mr. Johnston, has been abolished.

Rio Grande & Eagle Pass.—John A. Meehan, of Laredo, Tex., has been elected Treasurer, to succeed W. G. Clark, of Philadelphia, resigned. W. L. Giddens, Superintendent, has been elected General Manager, with office at Laredo, Tex., and the office of Superintendent has been abolished.

St. Joseph Terminal.—J. P. O'Brien has been appointed Purchasing Agent, with headquarters at St. Joseph, Mo., to succeed E. F. Weld, resigned.

St. Louis & San Francisco.—F. D. Russell, Assistant General Freight Agent, has been appointed General Freight Agent of the system, with headquarters at St. Louis. J. A. Middleton has been appointed Assistant General Freight Agent to succeed Mr. Russell.

St. Louis, Vandalia & Terre Haute.—The annual meeting of the stockholders of the company was held in Greenville, Ill., Jan. 14. The following were elected directors: Thomas D. Messler, J. N. McCullough, W. H. Barnes, W. R. McKean, Robert L. Dulaney, F. O. Stanard, A. G. Henry, Charles H. Seybt and J. S. Peers. The board organized by the election of the following officers: Thomas D. Messler, President; John F. Davidson, Treasurer; S. B. Liggett, Secretary, and C. D. Hoiles, Assistant Secretary.

Schuylkill Valley.—At the annual meeting of this company, the Mount Carbon & Port Carbon and the Mill Bank & Mine Hill Companies (all operated lines of the Philadelphia & Reading), was held at 407 Liberty street, Philadelphia, last week, and the following officers were elected: President, Austin Corbin; Secretary and Treasurer, P. C. Hollis; Managers, A. J. Antelo, Samuel R. Shipley, Thomas Cochran, A. A. McLeod, P. C. Hollis, William R. Taylor.

Tennessee & Coosa.—At the regular annual meeting of the stockholders of the road, at Guntersville, Ala., last week, the following board of directors was elected: Nathaniel Baxter, Jr., J. P. Williams, John T. Fletcher, A. M. Shook, T. T. Hillman, George L. Morris, William Richardson, W. F. Foster and S. K. Rayburn.

Terminal Railroad Association of St. Louis.—The following members now constitute the Board of Directors of the company: M. E. Ingalls, J. F. Barnard, M. H. Smith, S. H. H. Clark, C. M. Hays, A. W. Dickinson, and William Taussig. The officers are: William Taussig, President; J. F. Barnard, Vice-President, and James Hanna, Secretary.

Terre Haute & Indianapolis.—John G. Williams, Vice-President of this company, has been appointed General Manager, and assumed the duties of the latter position Jan. 9, with office at Terre Haute, Ind. The general freight and passenger agents heretofore reporting to the President now report to the Vice-President and General Manager.

Trenton & Atlantic.—The following are the officers of this company: Hon. John Hart Brewer, Chairman, Trenton, N. J.; T. C. Lathrop, Secretary, Elizabeth, N. J.; George H. Van Derbeek, Treasurer, Allentown, N. J.; C. C. Vermeule, C. E., Chief Engineer, 71 Broadway, New York.

Union Pacific.—A. J. Manderson has been appointed General Agent at Council Bluffs, Ia., vice W. H. Burns, promoted to be Assistant Superintendent at North Platte, Neb.

Wabash.—Samuel B. Knight has been appointed General Freight Agent and John D Lund Assistant General Freight Agent, both with headquarters at the general offices in St. Louis.

F. L. O'Leary, for the past two years Assistant Treasurer, has been elected Treasurer, with office at St. Louis, Mo., in place of James F. How, who resigned in order to devote his entire time to his duties as Vice President.

Western New York & Pennsylvania.—The following directors were elected at the annual meeting in Philadelphia this week: Edwin L. Owen, John D. Probst, Adolph Engler, William T. Tiers, George E. Bartol, E. W. Clark, Jr., Gustave E. Kissel, Isaac N. Seligman, Pascal P. Pratt, John A. Barclay, Edward T. Steel. Edward T. Steel and John Barclay are new directors, succeeding Carl Schurz and Arnold Marcus. Gustave E. Kissell, John D. Probst, Carl Schurz, and Arnold Marcus represented the second mortgage bondholders in the old board.

Willamette & Calapooia.—O. P. Coshow, J. M. Mayer, J. M. Waters, J. H. Glass, S. Percefull, C. D. Drake, A. C. Hausman, A. S. McDonald, Joseph Harrison, and R. N. Thompson, of North Brownsville, Or., are the incorporators of this company.

OLD AND NEW ROADS.

Albemarle & Pantego.—This road is now completed between Mackey's Ferry and the Pamlico River, with the exception of the five miles from Pantego south to Machet Pungo, the southern terminus, on Pantego Creek, near the mouth of the Pamlico River. George W. Roper, of Roper, N. C., is Superintendent.

Alleghany & Kinzua.—The contract for building the eight miles of new road, referred to last week, to connect the New York and Pennsylvania ends of the road, will probably be let next week. The company may yet decide not to let the work out to contractors, but to build the line with its own forces by day labor. The company proposes to build several other extensions this year, aggregating 25 miles in length. Locating surveys for these lines have not yet been finished, nor has any time been settled for letting contracts for grading. W. Barclay Parsons, 35 Broadway, New York City, is Chief Engineer.

Allentown Terminal.—A special train was run over this road at Allentown, Pa., Jan. 10. It connects the lines of the Central of New Jersey and Philadelphia & Reading at Allentown. The road will not be opened for general travel for two or three weeks, as there is still some work to be done on the deep embankments between the bridges over the Lehigh River, nor has the station yet been finished.

Alton, Venice & East St. Louis.—Articles of incorporation were filed by this company in Illinois last week to build an extension of the St. Louis, Alton & Springgeid from Alton south along the east side of the Mississippi River, through Venice to East St. Louis. The distance is about 25 miles The capital stock is $300,000. The principal office is at Alton.

Atlanta & West Point.—Trains of the Central of Georgia as well as those of this road now run over the six mile extension from East Point to Atlanta, Ga., recently completed. The line of the Central of Georgia between these points has been used by the two roads heretofore, but the tracks have become so crowded that a new line had to be built. The track of the Central of Georgia is now used by northbound trains and that of the Atlanta & West Point for southbound trains.

Anniston & Atlantic.—A survey is reported in progress between Anniston and Sylacauga, Ala., 53 miles, with the object of changing the road from three feet to standard gauge. This work has been contemplated for some time.

Arkansas & Gulf.—The officers of the company expect to let the contract for building this road in February. It is to extend from Pendleton, on the Arkansas River, to Medford, Watson and Arkansas City in Desha County, Ark., thence to Lake Village and the Louisiana state line in Chicot County, to connect with the Mississippi Valley Railroad of Louisiana. The distance is about 85 miles. The work is all embankment and light, with a maximum grade of 25 ft. to the mile, and about five per cent. curvature for the entire distance. W. R. Bergholz, 15 Cortlandt street, New York City, is President, and Adolph Veith, Arkansas City, Ark., is Engineer in Charge.

Atchison, Topeka & Santa Fe.—A survey is being made from Cerrillos, 48 miles north of Albuquerque, to San Pedro, N. M. The road will pass through the Cerrillos coalfields and will be about 40 miles in length. It is believed that the company is trying to prevent the Santa Fe Southern building over this route. The latter company has completed a location of this route and is now securing right of way.

The gross earnings, operating expenses (exclusive of taxes and rentals) and the net earnings of the line for the month of November, 1889, were as follows:

Name of road.	Gross earn.	Oper. exp.	Net earn.	Operated mileage.
Atchison, Top. & S. Fe and Leased Lines, including Chicago Line; St. Joseph; Chicago, Kan. & West.; New Mexico & Arizona and Sonora roads	$2,013,734	$1,136,348	$877,385	4,934
St. Louis, K. C. & Colo.	5,032	5,001	31	16
Gulf, Colorado & S. Fe	455,335	315,150	140,184	1,058
Southern California	137,111	110,330	26,782	476
Total	$2,611,211	$1,566,829	$1,044,382	6,529
Roads jointly owned with other companies:				
Atchison Co.'s one-half	130,767	105,576	25,191	582
Grand total	$2,741,978	$1,672,405	$1,069,573	7,112

The comparative statement of all lines shows as follows:

	Gross earn.	Net earn.	Per mile.—Gross earn.	Per mile.—Net earn.	Mileage.
November, 1889.	$2,741,978	$1,069,573	$385.56	$150.39	7,112
November, 1888.	2,525,184	807,801	354.98	113.56	7,114
Inc., Nov., 1889.	$216,794	$261,772	$30.58	$36.83	dec. 2

Augusta & Southeastern.—This Arkansas road has been consolidated with the White & Black River Valley a projected line.

Baltimore & Ohio.—The earnings and expenses of the road for December (approximated), and for the three months to December 31, were as follows:

Month of December.

	1889.	1888.	Inc.
Gross earnings	$2,116,283	$1,765,326	$350,957
Operating expenses	1,336,568	1,256,745	79,823
Net earnings	$779,715	$508,581	$271,134

Three months to Dec. 31.

	1889.	1888.	Inc.
Gross earnings	$6,328,314	$5,218,832	$1,109,482
Operating expenses	3,984,405	3,660,825	323,580
Net earnings	$2,343,909	$1,558,007	$785,902

Birmingham, Jackson & Kansas City.—The company was voted $45,000 in bonds to aid in building the road between Jackson and Dyersburg, Tenn., about 40 miles. Gadsden, Tenn., has voted $15,000 and Alamo $20,000, and elections will soon be held in other towns. The contract for building the 40 miles between Dyersburg and Jackson, known as the middle division, will be let in February or March. Robert J. Gates, of Memphis, Tenn., can give information.

Birmingham Mineral.—The Red Gap Branch from Gates City around the south side of the Red Mountain to Graces, Ala., has been put in operation. The branch is 10 miles long.

The grading on the extension of the Tuscaloosa branch, six miles north of its present terminus to a point within 12 miles of Tuscaloosa, is nearly finished. The line reaches some new mines in Tuscaloosa County.

Birmingham, Sheffield & Tennessee River.—All the grading on the extension from Jasper, Ala., south eight miles to Hewitt Station, on the Georgia Pacific, has been completed, with the exception of a very heavy cut, which will not be completed for 40 days. Tracklaying has been begun and about four miles has been laid.

Briarfield, Blockton & Birmingham.—Tracklaying has been completed for 22 miles from Montevallo, Ala., north toward Gurnee. Grading on the branch from Gurnee to Blockton has been completed, and tracklaying will begin very soon. The line from Gurnee north to Bessemer, the northern terminus of the line, has not yet been let, but the estimates of the work are now being made, and as soon as completed contracts will be awarded. The road is to use the terminals of the Georgia Pacific at Bessemer, and the tracks of the Bessemer branch of that road will also be used to give the line an entrance to Birmingham.

Brockville, Westport & Sault Ste. Marie.—At the annual meeting of this company, to be held in Brockville, Ont., Jan. 20, the meeting will consider the letting of contracts for the construction of the line from Westport to Palmer Rapids. The proposition to authorize the directors to enter into negotiations for the lease of the line will also be discussed.

Brunswick, Athens & Northwestern.—Grading is now in progress on this road near Stillmore, Emanuel County, Ga. The force now being employed on the work is small, but the company intends to increase it very soon. George M. Brinson, of Stillmore, Ga., is a director.

Buffalo Creek.—This is a road about six miles long at Buffalo, N. Y., which is owned by the Lehigh Valley & New York, Lake Erie & Western, but has heretofore been operated with a separate organization. Last week, however, the road was formally leased to the companies controlling it. The road is used exclusively for freight traffic.

Buffalo Dock & Connecting.—This company has filed articles of incorporation in New York, with a capital stock of $70,000, to construct a road commencing at Hamburg street, in the city of Buffalo, at its junction with the Hambur Canal, and thence to a point on the

Erie Canal to the city line. The length of the road is to be 6¾ miles.

Cairo, Vincennes & Chicago.—A first mortgage and deed of trust for $5,000,000 on the property of this company has been filed for record at Springfield, Ill. It is made in favor of the Central Trust Co., of New York, and secures an issue of five per cent. bonds, due in 50 years. The proceeds are to be used in cancelling the purchase-money mortgage given to the trustees of the road last January, and is in accordance with the arrangement made with the Cleveland, Cincinnati, Chicago & St. Louis at the time that company made the agreement for operating the road.

Camden, Sabine Pass & Louisiana.—The charter of the company has been filed in Arkansas. The capital stock is placed at $3,000,000. It is proposed to build the road from Camden through the counties of Ouachita, Union and Columbia to the state line between Arkansas and Louisiana, with power to continue through Louisiana and Texas to Sabine Pass. The length of the line in Arkansas will be 50 miles. A. S. Morgan, of Camden, Ark., is President.

Cape Breton.—Tracklaying has been finished from Grand Narrows north to Sydney and North Sydney, a distance of 55 miles. Thirty miles of the road between Port Hawkesbury and Grand Narrows is also completed. Isbestir & Reid have the contract for building 46 miles from Port Hawkesbury. A line from Sydney to Louisburg will be surveyed and located immediately under the direction of Mr. Brophy, resident engineer. This extension will give Louisburg and the people of the eastern townships rail communication, and will connect with eight coal mines already in operation. H. Dunkin is Engineer-in-charge.

Cape Fear & Cincinnati.—The city of Newberne, N. C., has voted this company $50,000 in bonds. It is intended to begin construction immediately near that city on 150 miles of the distance between Wilmington, N. C., and Greenville, S. C. The company claims that it will complete this 150 miles this year. Sixty-lb. rails will be used. George B. Morton, Neal Building, Baltimore, Md., is Vice-President and Chief Engineer.

Cape Fear & Yadkin Valley.—The extension from Fayetteville to Wilmington, N. C., 81 miles, will probably be opened Jan. 31. Nearly all the track has been laid, with the exception of a small gap in the middle of the line. The iron bridge being erected over the Cape Fear River, about 15 miles from Fayetteville, will be finished this week.

Caroline.—A bill to incorporate this company has been introduced in the Virginia House of Delegates. It provides for the construction of a road from some point on the Richmond, Fredericksburg & Potomac, at or near Milford Station, in Caroline County, to some point at or near Port Royal. The capital stock to be not less than $100,000.

Central of Georgia.—The President of the road states that grading will be commenced on the extension of the Columbus & Rome from Greenville north to Newnan, Ga., 23 miles, very soon. A number of trestles on the road are to be filled in first. The line between Columbus and Greenville, 50 miles, is to be changed to standard gauge. The surveys for the work were made last August.

Charleston, Sumter & Northern.—The name of the Eutawville Railroad has been changed to the above, as already stated. The extension from Vances north to Sumter, a distance of 35 miles, has been finished and opened for traffic. The construction work on the line has been heavy. The maximum grades are 30 ft. per mile and the maximum curvature is three degrees.

Chicago, Kansas & Nebraska.—The attorneys for the municipal alliance, composed of Kansas holders of the company's stock, have filed their cross-bill with the United States Circuit Court at Topeka. This bill was ordered by Judge Brewer to be filed some time ago, but the time was extended. The cross-bill covers the points raised in the petition presented to Judge Brewer by the attorneys of the alliance, and claims that to allow the Mercantile Trust Co. of New York to foreclose the mortgage would render worthless the $3,000,000 worth of bonds issued by the municipalities which received in payment the railroad stock.

Chicago, Rock Island & Pacific.—A contract has been let for a further extension of the Southwestern division of the road from El Reno, Oklahoma, 25 miles south, on the line of the proposed extension toward Fort Worth via Union City and Silver City.

Columbia Central.—This road is projected as an extension of the Baltimore & Drum Point road from a point on the line in Anne Arundel County, Md., to the city of Washington. The application of the company for incorporation was denied by the commissioners of the district last year, but application for a charter has been renewed. The route in the District of Columbia is to be westerly through the district to the east bank of the Anacosta River, near Benning's bridge; across the river and westerly to the intersection of F and Fifteenth streets northeast; through F street to Maryland avenue southwest; through Maryland avenue, northeast, 2,640 ft. The line in the district is to be partly or wholly elevated. The capital stock is $100,000.

Columbia, Newberry & Laurens.—The erection of the bridge over the Broad River one mile from Columbia, S. C., has delayed construction work on this road very much. It is now expected, however, to have the bridge completed by Feb. 1, and tracklaying will then be commenced and pushed rapidly to Newberry, 43 miles northwest of Columbia. The grading has been finished for some time. Charles Ellis, Jr., of Columbia, S. C., is Chief Engineer.

Coudersport & Pine Creek.—Incorporated in Pennsylvania to build a road from Coudersport, Potter County, Pa., and thence easterly along the valleys of Mill Creek and the west branch of Pine Creek to Galleton, a distance of 20 miles in length. The capital stock of the company is $200,000. F. W. Knox, Coudersport, Pa., is President.

Croton Valley.—At a meeting held this week at New York, the stockholders voted to extend the road from its present terminus eight miles north of Croton Valley, Westchester County, N. Y., on the New York & Northern, northeast 10 miles to the Connecticut state line.

Deadwood Central.—This road is now in operation between Deadwood and Lead City, S. D., a distance of 3½ miles. Extensions from Deadwood to Portland Mine, a distance of 12 miles, and from Deadwood to Galena, a distance of eight miles, are under consideration. James P. Miller, of Deadwood, is President.

Denver & Rio Grande.—At a meeting of the stockholders held at Denver last week, the joint lease with the Colorado Midland, of the Rio Grande Junction road, between Rifle Creek and Grand Junction, Col., a distance of about 63 miles, was ratified. The new line may be placed in operation the latter part of February. It is stated that the Missouri Pacific and the Chicago, Rock Island & Pacific have made a trackage agreement to run through trains over the Colorado Midland, the Rio Grande Junction, and the Rio Grande & Western, from Pueblo and Colorado Springs to Salt Lake City.

Denver, Texas & Fort Worth.—Grading has been commenced on a branch from near Chicosa, 11 miles above Trinidad, Col., six miles up Road Cañon, to coal lands of the Colorado Coal & Iron Co. and the Denver Fuel Co. A Mr. De Remer has the contract.

East River.—The charter of this company has been filed at Albany, N. Y. The road is to begin in the Eastern District of Brooklyn, near South Seventh street, and thence partly in cutting and partly underground to the East River; thence under the East River by means of a tunnel and under lands and streets in New York City to a point near Broome street. The distance will be about three-fifths of a mile. The capital stock is $100,000.

Georgia, Carolina & Northern.—The preliminary survey of the road has been completed to Atlanta. The route from Athens is by way of Jug Tavern and Lawrenceville. The line passes near Decatur, but does not touch that town.

Georgia Southern & Florida.—Tracklaying is in progress in Bradford County, Fla., between Lake Butler and Palatka. There is now but a short distance of the road uncompleted. The line will probably be opened through to Palatka by Feb. 15.

Morgan & Reynolds, of Macon, Ga., who built the section south of Lake City, Fla., are reported to have the contract for building the branch from a point near Tifton southwest to Thomasville, Ga., about 50 miles.

Grand Trunk.—The contract for double tracking this road from Belleville to Gananoque, Ont., 65 miles, has, it is reported, been awarded to McArthur Bros., of St. Paul, Minn., and it is expected that work will be begun at once on the rock cutting at Shannonville, and possibly at the cutting east of Napanee. The grade east of Napanee is to be lowered 12 ft.

Gulf, Sabine & Kansas City.—The company has submitted to the Board of Trade of Shreveport, La., a proposition to build a road through Caddo Parish, from the North end to the South end, and passing through Shreveport, if the parish votes the company a five-mill tax for ten years.

Gurley & Paint Rock Valley.—The company has opened subscription books in Huntsville, Gurley and other Alabama towns, and a considerable amount of stock has been subscribed. The road is to be built up Paint Rock Creek through Gurley to the Alabama state line.

Houston Central, Arkansas & Northern.—The company has filed a charter in Arkansas for a road in that state to connect with the line now building from Monroe, La. The road will start at Marianna, Lee County, where it will connect with the St. Louis, Iron Mountain & Southern, and extend south through the counties of Phillips, Monroe, Arkansas, Desha, Chicot and Ashley to the state line, where a connection will be made with the road building in Louisiana. Work has been going on in Arkansas for some time previous to the date when the charter was issued.

Huron, Chamberlain & Black Hills.—The preliminary survey was completed between Huron and Chamberlain, S. D., a distance of 79 miles, some time ago. A new line, 23 miles long, had been recently surveyed, over the Wessington Hills, which considerably shortens the line and reduces the curvature and cost of construction. Since the survey was completed the company has been securing the right of way and has obtained options on 26 miles. E. C. Harmston, of Alpena, S. D., is chief engineer.

Indiana & Illinois Southern.—A decree has been entered in the case of John S. Alley vs. the Springfield, Effingham & Southeastern, now succeeded by this company, in the Circuit Court at Indianapolis. The Court decides that the mortgage or deed of trust dated June 1, 1886, executed to the plaintiff, is a first and paramount lien in favor of Alley as trustee. It is ordered that the consolidated company shall pay to complainant, as trustee, $595,525, or in default of payment, the income mortgage shall be barred and the property sold at Indianapolis.

Kansas City, Louisiana & Gulf.—The survey has been completed from Arcadia, La., south along the west side of the Saline Bayou for a distance of 16 miles. C. D. Leeper has the contract for grading the first six miles from Arcadia, and about a mile of this section has been finished.

Kansas City Surburban Belt.—Tracklaying on this road has been commenced and about half a mile has been laid in Kansas City. Most of the grading has been completed. The road will be double track and is being built from Second street and Broadway around Kansas City via the east bottoms and the valley of the Blue and Brush creeks. J. W. Heylmun, Seventh and Wyandotte streets, Kansas City, is Chief Engineer.

Kansas City, Watkins & Gulf.—Kennedy & Stone, of Topeka, Kan., the contractors on this road, have the grading completed for 40 miles from Lake Charles, La., north towards the Red River. The approaches to the Red River have not yet been surveyed, nor has the point at which the line will cross it been definitely decided. No surveying has been done north of the river.

Lackawanna & Montrose.—The locating survey is now being made for this branch of the Delaware, Lackawanna & Western from Montrose station to Montrose, 10 miles. The heaviest grade is between Heart Lake and Alford, where it is 100 ft. to the mile. From Heart Lake to Montrose the route is very level. W. D. Lusk, of Montrose, is president.

Mary Lee Coal & Railway Co.—This company has recently completed and put in operation a line from East Birmingham to Louisburg, Ala. Several other short lines are under construction and will soon be opened for traffic.

Maxton, Alma & Rowland.—The name of the Alma & Little Rock has been changed to the above. The road is now open for traffic between Rowland and Maxton, N. C.

Mexican Gulf, Pacific & Puget Sound.—This company, which has already been incorporated in Florida, has filed a charter in Alabama to build a road, beginning at the line between Alabama and Florida, in Escambia County, and extending northwesterly through the counties of Escambia, Monroe, Clarke, Marengo, Greene, Pickens and Lamar to a point on the Kansas City, Memphis & Birmingham. The capital stock is placed at $200,000.

Mississippi & Little Rock.—This company, which was incorporated in Arkansas a year ago, was granted a new charter last week. The capital stock is $1,000,000. The contract for building the road has been let to R. W. Worthen, of Little Rock. A section of 13 miles west from Lost Island in Prairie County, Ark., is now under construction. The road is to be built from Little Rock east through the counties of Pulaski, Lonoke, Prairie, and Monroe counties, to a point on the St. Louis, Arkansas & Texas, midway between the Little Rock & Memphis and the Little Rock branch of the road, and from this point easterly to Duncan, on the Arkansas Midland. The distance is 61 miles. Most of the distance was graded some years ago by the Arkansas Midland, and this grade will be utilized by the new company. Judge P. C. Dooley, of Little Rock, is President.

Monterey & Mexican Gulf.—The road was opened last week for freight and passenger business to Linares, 91 miles south of Monterey. This is 30 miles beyond Monte Morelos, which has heretofore been the terminus. There is still 232 miles to be built to complete the road from Linares to Tampico, and 67 miles to complete the northwestern extension from Monterey to Vernadito, on the Mexican International.

Nashville & Knoxville.—Work on the extension from Buffalo Valley to Cookeville, Tenn., 29 miles, has been delayed from several causes, but it is now believed that the tracklaying will be finished by April 1. All the grading on this extension has been done. From Cookeville the road is to be extended further east to Overton and the coalfields of Tentriss County. Grading will probably be commenced on this division in a few months.

New Roads.—A survey is being made from Sherman, Tex., Northwest to Ardmore, on the Atchison, Topeka & Santa Fe., in the Chickasaw Nation, Ind. Ter.

New York, Fort Wayne & Chicago.—The city of Warsaw, Ind., has voted $16,500, and Columbia City, Ind., has voted $16,000 to the company to secure the building of the main line through those places. This is the road which its projectors propose to build to parallel the Pittsburgh, Fort Wayne & Chicago between Fort Wayne, Ind., and Chicago.

Northern Pacific.—Construction work on the several branches of this road has been almost entirely suspended for the winter. Bridge building is the only work in progress on the branch from Gallatin and Butte, Mont., 70 miles. It will be opened in March. Nearly 50 trestles and bridges will be built on this line within a distance of 35 miles in the Homestake Pass. The track on the Pony and Red Bluff branch, which leaves the line at Sappington, between Jefferson Canon and Gallatin, has been completed to Harrison. At this point the line diverges, one branch extending southwest to Pony, and the other south and east to Red Bluff. The line to Pony will probably be completed during the winter, and the line through Norris to Red Bluff will be finished in the spring. A branch will be built from Norris, west about 10 miles, to Richmond Flats. On the Elkhorn branch, from Boulder to Elkhorn, Mont., 21 miles, about 12 miles of the track has been laid, and that work has been suspended. Grading and bridge building are still in progress. On the line from Missoula to Mullan, Idaho, the track has been laid to a point six miles west of Frenchtown. Nothing definite has yet been settled concerning the proposed branch to Cooke City, Mont. It is believed, however, that the line will commence at Stillwater Station, on the main line, and extend down the Stillwater River. The survey for this line was made last summer. The permission of Congress has yet to be obtained to build across the Crow Indian Reservation in the southern part of the state.

Northern Pacific & Manitoba.—The Morris & Brandon branch has been completed from the former point for 135 miles, to a point within five miles of Brandon, Man. It is stated that the company has been unable to obtain the land in Brandon which it needs for terminal facilities, and that it will probably change the northern terminal point of the extension.

Nova Scotia Central.—The extension from Middleton, on the Windsor & Annapolis, the present northern terminus, to Margaretville Harbor, on the Bay of Fundy, a distance of 10 miles, will soon be placed under contract. A branch is also to be built from New Germany West about 25 miles into the Caledonian gold district of Queens County. Robert H. Fraser, of Bridgewater, N. S., is Superintendent.

Ohio, Indiana & Western.—In the suit of the Central Trust Company of New York and Frank Sturgis against this company, Judge Gresham, on Jan. 9, entered a decree of foreclosure and sale. The court finds that bonds and interest certificates were issued and mortgages made by the defendant as alleged in the complaint, that default has been made in payment of interest, that the conditions specified have not been complied with and that there are now due to the plaintiff's approximates $400,000, and unless these are paid to the complainant within 10 days, the court decrees that all the mortgaged premises be sold as an entirety by the special master commissioners at Indianapolis. The lowest bid to be received is fixed at $3,000,000.

Omaha & South Dakota.—The directors have ordered surveys to be made at once for the proposed line from Forest City to Yankton, S. D., a distance of about 350 miles. W. W. Olney will have charge of the surveys.

Oregon Railway & Navigation Co.—The Mullan branch of the Washington & Idaho has been completed from Tekoa, Whitman County, Wash., east to Wallace, Shoshone County, Idaho, in the Cœur d'Alene mining country. There still remains about eight miles from Wallace south to Mullan to be completed. This section will not be built until spring.

Ottawa & Gatineau Valley.—Cyrille Chevrier, of Hull, Que., has been awarded the contract for the rock work on the second ten-mile section of the road from Hull north.

Pacific Short Line.—A force of 600 men has been grading the extension of the line from Plainview west to O'Neil, Neb., 45 miles, for the past few weeks. E. P. Reynolds & Co., the contractors, have withdrawn the men recently, on account of the severe weather, and work on the extension has been suspended. Some tracklaying on the line between South Sioux City and

Plainview, Neb., 82 miles, may be done during the winter.

Parry Sound Colonization.—This company is applying to the Ontario Legislature for an act to amend its charter and to amend the terms for the issue of bonds for the extension of the line eastward to the village of Renfrew or some point on the Canadian Pacific.

Philadelphia & Reading.—The annual report of the company, which was read at the annual meeting in Philadelphia last week, gave the following statement of the earnings for the year: Gross receipts, $19,018,613; gross expenses, $10,918,591; earnings from traffic, $8,100,022; profit from other sources, $769,398; total profit, $8,869,420; less rentals, $2,842,319; interest account, $4,085,138; debtor balance, profit and loss, State taxes, etc., $723,750; total, $7,656,208; balance, $1,213,212; less interest and sinking funds of divisional mortgages of the Coal & Iron Co., guaranteed by the Railroad Co., interest, $790,200; sinking funds, $354,084; total, $1,144,284; surplus, $68,927. The gross receipts of the Coal company were, $17,818,225; gross expenditures, $17,966,075; deficiency in operating, $147,849; to which add: Interest for the year, $826,523; deficiency, including fixed charges, $974,373. A protest was made against the voting trust casting a vote for Mr. Corbin, on the ground that it was contrary to law and public policy. Several other protests were also offered. The opposition had filed a bill asking the Courts to enjoin the voting trust from casting a vote. Before the meeting was held, Judge Hare, in the Court of Common Pleas, decided not to grant the injunction asked against the company, the immediate object of which was to postpone the annual election of officers; and the ultimate object, to do away altogether with the voting trust of that company. The Court did not decide any other questions of law raised by the bills filed. The Court was not prepared to say that the election of Mr. Corbin as President would be valid. The trust was supposed to act in an entirely disinterested manner, and the election of one of its number was certainly not disinterested. But as this point has not been raised, the Court did not feel called upon to pass upon it.

Surveys have been made for a short cut-off about one and a quarter miles in length, from the main line at Tuckerton, four miles north of Reading Pa., east to Temple on the East Penn Branch. If built, the line will save a nine-mile haul for coal shipments over a heavy grade from Reading to Temple.

Port Aransas Co.—This company proposes to build street railroads at Corpus Christi, Tex., and develop property there, and it also proposes to construct a steam railroad from Corpus Christi via Mustang Island to Aransas Pass, a distance of 25 miles.

Raleigh Springs.—C. J. Wagner & Co., of Memphis, have been awarded the contract for building this road between Memphis and Raleigh, Tenn., a distance of 11 miles. The road will probably be finished by April 1 next. The work is light, the heaviest grade being 4 ft. to the mile. There is only one curve, and that is in the city of Memphis. L. Ergsfeld, of Memphis, is chief engineer.

Reed Springs & Kansas City.—Surveys are being made for two lines from Liberty, Mo., one south to connect with the Wabash, and another west to connect with the Chicago, Kansas City & Texas. The company expects to begin building early in the spring soon after the surveys have been finished. Samuel Hardwicke, of Liberty, is Vice President.

Rockaway Valley.—The two subsidiary companies which built the extensions from New Germantown to Portersville, N. J., and from that point to Peapack, 7.5 miles in all, were consolidated with this company last week. The 12 miles of road from Whitehouse on the Central of New Jersey to Peapack will be in operation by Feb. 1. The right of way is being obtained for a further extension from Peapack northeast about 10 miles to Morristown, on the Delaware, Lackawanna & Western.

St. Augustine & North Beach.—This line, referred to last week, was put in operation Jan. 15. The company has arranged for the use of the terminal facilities of the Jacksonville, St. Augustine & Halifax River road at St. Augustine, Fla., and for using the tracks of that road for some two miles to the junction with this line, which has been built as a standard gauge to the North Beach, three miles from the junction. There is about three-quarters of a mile of trestle work, for the most part of creosote material, and also an iron drawbridge over the North River. Including the equipment the road has cost about $75,000 to build and complete ready for operation. J. N. Hazlehurst, of St. Augustine, is General Manager.

San Antonio & Aransas Pass.—The Waco branch has been opened from Giddings, Tex., to Evergreen, a new station seven miles north of Giddings. The track has been laid about 12 miles beyond Evergreen to a point a short distance north of Lexington.

Work is in progress on the extensions from Lockhart north toward Austin, and from Comfort to Llano.

Stuttgart & Arkansas River.—Tracklaying was begun last week on the 22 miles of the road from Pendleton north to De Witt, Ark. The grading on this section is nearly all finished. About 100 men are working on the next 25 miles, from De Witt to Stuttgart, on the St. Louis, Arkansas & Texas. It is expected to have the line finished to De Witt by April 1. H. G. Leslie, of Stuttgart, has the contract. F. M. Gillett, of 3 Wall street, New York City, is President.

Tavares, Apopka & Gulf.—The road has been sold to Henry H. Jackson and others, of New York City, for $100,000, to satisfy the judgment obtained by the Central Trust Co., Trustee.

Terminal Railroad Association of St. Louis.—This company, as already noticed, has acquired the lease of the St. Louis bridge and of the Tunnel Railroad of St. Louis, and has also purchased the properties of the Union Depot Co., of St. Louis, and of the Union Railway & Transit Companies and Terminal Railroads of St. Louis and East St. Louis. The company is composed of the following proprietary lines, which are the sole owners: The Cleveland, Cincinnati, Chicago & St. Louis, Louisville & Nashville, St. Louis, Iron Mountain & Southern, Ohio & Mississippi, Missouri Pacific and Wabash. In its organization ample provisions are made to transact all the business of non-proprietary lines and to admit other lines into ownership. It has issued $7,000,000 of 4½ per cent. bonds, $5,000,000 of which were paid for the properties and $2,000,000 are retained for purposes of improvements and enlargements, among which the building of a new union passenger station is the most pressing, and arrangements for beginning the erection of the building are well advanced. The plans for the station will be completed immediately. Dr. William Taussig, of St. Louis, is President.

Trenton & Atlantic.—The officers of the company had expected to let the contract for building the road next week, but delays have occurred, and the letting of the work has been postponed till next month. The road is to extend from Trenton across New Jersey, through Allentown and Lakewood to Point Pleasant, on the Atlantic Coast. The distance is 43 miles. The first 20 miles from Trenton passes through a rich agricultural district. On the eastern part of the line there will be a heavy traffic in pine timber. Sixty-pound rails will be used. The ruling gradient will be 30 ft. per mile. The soil is loam, gravel and sand. A good terminus in the central part of Trenton has been provided for. The Delaware & Raritan Canal will be crossed by an iron pivot bridge 175 ft. in length. There will also be a bridge of 100-ft. span and one of 150-ft. span. From the crossing of the Pennsylvania road eastward the work of construction will not be heavy. The principal bridges on this section are over the Camden & Amboy road at Robbinsville and over the Metedeconk River near Burrsville.

An issue of $860,000 five per cent. bonds has been authorized, and arrangements have been practically completed in New York to place the entire issue. C. C. Vermeule, 71 Broadway, New York City, is Chief Engineer, and will let the contract for building the line.

Valley (Ohio).—The Baltimore & Ohio is reported to have secured control of this road, extending from Valley Junction north to Cleveland, 75 miles. By the purchase of the line the Baltimore & Ohio will have an entrance to Cleveland when it completes a line to connect with the Valley road. It does not now connect with it, but it is stated that it will soon build a branch from a point on its Wheeling branch to make a connection, but this has been denied.

Waukesha, Pewaukee & Oconomowoc.—The grading is reported as being in progress on the 22 miles of this road between Waukesha and Oconomowoc, Wis., and it is claimed that the tracklaying will be completed this month.

West Virginia & Pennsylvania.—The contract for the grading of the road from Rowlesburg, W. Va., to Uniontown, Pa., has been let to the Preston County Mineral & Development Co. Work will probably commence at once and be completed from Rowlesburg to Uniontown by Sept. 1. The route is through a rich mineral and timber country. The office of the company is at Kingwood, W. Va.

Whitefield & Jefferson.—The Concord & Montrea has purchased the interest of the Brown Lumbe Co., in this road and it now owns nearly all the capital stock. The Brown Lumber Co. held about half of the capital stock of $200,000. The road extends from Whitefield on the Concord & Montreal to Jefferson, N. H., 18 miles. It is understood that an extension of the road about 15 miles to a connection with the Grand Trunk near Berlin Falls, N. H. will be undertaken next summer

White & Black River Valley.—At a meeting of the stockholders of this company, held in Newport, Ark., Jan 10., the Augusta & Southeastern, recently completed from Coats to Gregory, Ark., seven miles, was merged with this line, which is projected as an extension of the Batesville & Brinkley from Jacksonport to Black Rock. Bonds are to be issued at the rate of $15,000 per mile on the line between Jacksonport and Black Rock.

Wichita, McPherson & Southern.—The charter of the company has been filed with the Secretary of State at Topeka, Kan., and a New York construction company has made arrangements to build the road between McPherson and Wichita, Kan., a distance of 35 miles, this year.

Willamette & Calapooia.—Incorporated in Oregon to build a road from North Brownsville east, through the Calapooia Valley to the Blue River Mines, near the headwaters of the Calapooia River. The capital stock is $100,000. The principal office is at North Brownsville, Linn County, Ore.

Wilmington, Onslow & East Carolina.—Tracklaying has been going on for some time from the junction with the Wilmington Seacoast line in Wilmington, N. C. The force at work was increased last week, and work is being actively prosecuted toward Jacksonville, in Onslow County.

TRAFFIC.

Traffic Notes.

The Kansas City, Ft. Scott & Memphis has reduced the rate on flour and certain other cereal products to a large number of Texas points, from Kansas City, to 35c. per 100 lbs.

At the meeting of the Western Freight Association, in Chicago, on Tuesday, the proposition of the Chicago & Alton to reduce cattle rates from Kansas City to Chicago to 12½ cents was voted down. The company at once gave notice that the rate would be put in effect after the usual 10 days' notice.

The Central Traffic Association has refused to authorize lines in its jurisdiction to participate in the low through east-bound passenger rates from St. Paul made by the Chicago, Burlington & Northern, although the Lake Shore & Michigan Southern was one of the applicants for permission to do so.

A number of the Kansas roads have issued their new local freight tariffs, made in pursuance of the agreement reached at the recent conferences in the Interstate Commerce Railway Association. The average reduction is estimated to be about eight per cent., and the Kansas City papers express much gratification at the change.

The Louisville, New Albany & Chicago has resumed the sale of 1,000-mile tickets at $20. These tickets were withdrawn several months ago as a result of the settlement of a disagreement with the Pennsylvania lines, whose officers claimed that many of the tickets found their way into the hands of passengers at greatly reduced rates. It is said that they are now put on sale at non-competitive stations in such a way as to avoid an infraction of the agreement.

The Kansas City, Wyandotte & Northwestern is dissatisfied because its application for privileges in the Kansas City Union Station have been persistently refused for a long time and has now announced a general reduction of freight and passenger rates to go into effect Jan. 15. It is expected by this move to draw business from competitors who have an interest in the Union Depot. Local passenger rates are reduced to two cents a mile, and 1,000-mile tickets will be sold for $15. Local freight rates are reduced on third, fourth and fifth classes from one to three cents per 100 lbs.

It appears that the Union Pacific and the Southern Pacific have made a traffic agreement covering business to and from California via Ogden. As is well known, the position of the Southern Pacific concerning this business has been for a long time unfriendly towards the Union Pacific, and the latter has no doubt been perfecting its facilities for reaching the Pacific coast by way of the Oregon Short Line. The newspapers do not give the details of the new agreement, but it seems to be accepted by the public as a sure indication that the Union Pacific will take no further action toward securing any new line to the Pacific coast at present.

The regular quarterly meeting of the Presidents of the Interstate Commerce Railway Association was held in New York City on Tuesday of this week. The meeting lasted only about two hours. The only prominent roads unrepresented were the Atchison, Topeka & Santa Fe, the Denver & Rio Grande and the St. Louis & San Francisco. Chairman Walker made a long report on the condition of the Association, and a committee consisting of the chairmen of the various auxiliary associations was ordered to make a special report embodying a revised plan of organization. A resolution was adopted that requests from employes of other roads for passes be honored only when coming through the President, Vice-President or General Manager. Chairman Walker made a report holding that the traffic agreement between the Chicago & Northwestern and Union Pacific was in violation of the agreement under which the Association was formed, but there was no discussion upon it.

The Burlington & Missouri River, in Nebraska, has given its station agents an order for use during the scarcity of freight cars, which provides that shippers making application shall be supplied in proportion to the number of cars loaded by them during the six months from May to October preceding. Shippers who do no business during these six months to be allotted one-half the number of cars allotted the regular shipper who loaded the least number of cars during the six months' period. Certain shippers in Lincoln have complained to the Nebraska Board of Transportation concerning this, and the Secretary of the Board replies that the rule, thourgh arbitrary, is probably administered in an equitable manner generally; but he hints that shippers who have their corn yet to buy are sometimes furnished with cars so that they may load the grain in small lots, as purchased. The Board would in such case, on application, investigate and decide the question on the basis of providing cars in the order applied for by parties who could show the grain ready for immediate loading.

East-bound Shipments.

The shipments of east-bound freight from Chicago by all lines for the week ending Saturday, Jan. 11, amounted to 131,793 tons, against 112,500 tons during the preceding week, an increase of 19,293 tons, and against 73,386 tons during the corresponding week of 1889, an increase of 58,407 tons. The proportions carried by each road were:

	W'k to Jan. 11.		W'k to Jan. 4.	
	Tons.	P. c.	Tons.	P. c.
Michigan Central	22,490	17.1	16,734	14.9
Wabash	4,680	3.5	3,986	3.5
Lake Shore & Michigan South.	25,161	19.1	22,207	19.7
Pitts., Ft. Wayne & Chicago	12,529	9.5	8,388	7.5
Chicago, St. Louis & Pitts.	10,650	8.1	10,691	9.5
Baltimore & Ohio	14,786	11.2	13,160	11.7
Chicago & Grand Trunk	18,839	14.3	19,697	17.4
New York, Chic. & St. Louis	12,295	9.3	9,977	8.9
Chicago & Atlantic	10,363	7.9	7,450	6.4
Total	131,793	100.0	112,500	100.0

Of the above shipments 8,684 tons were flour, 85,622 tons grain, 2,920 tons millstuffs, 7,139 tons cured meats, 6,697 tons lard, 8,552 tons dressed beef, 1,083 tons butter, 1,674 tons hides, 183 tons wool and 3,880 tons lumber. The shipments for the week were the largest on record. The three Vanderbilt lines together carried 45.5 per cent. of all the shipments, while the Pennsylvania lines carried 17.6 per cent.

The shipments of corn from Chicago by the several roads have been unprecedented. The Chicago & Grand Trunk carried 419,000 bushels, the Michigan Central 405,000, the Lake Shore 351,000, the Baltimore & Ohio 311,000, the N. Y. C. & W. L. 213,000, the P., F. W. & C. 188,000, the Chicago & Atlantic 183,000, the Wabash 132,000. Nearly every road leading to Baltimore reports blockades. At Buffalo trains have to wait 12 hours to get into the yards, in some cases. Roads in Nebraska have had to refuse corn for Baltimore, and also to some extent for other ports.

East-Bound Shipments for the Year.

The following statement shows the gross tonnage of export and domestic freight and aggregate tonnage carried by all lines in the Central Traffic Association to Western trunk line termini and east thereof during the year 1889:

Roads.	Export freight in tons.	Per cent.	Domestic freight in tons.	Per cent.	Aggregate tonnage.
B. & O.	60,376	18.2	277,147	13.0	337,523
C. & G. T.	82,725	24.9	350,748	16.5	433,473
C., St. L. & P.	29,489	8.9	151,026	7.1	180,515
L. S. & M. S.	28,399	8.5	356,069	16.7	384,468
M. C.	74,114	22.3	376,876	17.7	450,990
N. Y., C. & St. L.	16,605	5.0	205,397	9.6	222,002
P., Ft. W. & C.	40,481	12.2	413,212	19.4	453,693
Total	332,189	100.0	2,130,475	100.0	2,462,664
1888.	359,000		2,005,627		2,364,627
Decrease	26 811				98,037
Increase			121,848		

The total tonnage carried by the "Big Four" during 1888 was 16,645 tons. As this road did not report to the Central Traffic Association in 1889 the decrease is necessarily reduced to 81,392 tons.

The percentages of the aggregate tonnage carried were as follows:

B & O	13.7
C. & G. T.	17.6
C. St L. & P.	7.4
L. S & M. S.	15.6
M. C.	18.3
N. Y., C. & St. L.	9.0
P., Ft. W. & C.	18.4
Totals	100.0